



Chem

ARMED FORCES CHEMICAL JOURNAL

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IN THIS ISSUE, ARTICLES ON:

Annual Meeting—General LeMay, Banquet Speaker

Some Dilemmas of Defense, by Dr. Hannah

Desert Post Life—A Wife's Story of Dugway



"CHEMISTRY FLIES"
Theme for A.F.C.A. Meeting

—U.S. Air Force Photo

MARCH-APRIL, 1954

Keys to efficient production

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a case in point...

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Constant research, strict quality control and a knowledge of the needs of industry have made this and other NIALK products leaders in their fields.

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ARMED FORCES CHEMICAL JOURNAL

OFFICIAL PUBLICATION OF THE ARMED FORCES CHEMICAL ASSOCIATION
SUITE 819, 2025 EYE ST., N.W., WASHINGTON 6, D.C.

COVER PHOTO

Martin B-61 "Matador" pilotless bomber taking off at Cocoa, Fla. The extensive use of chemicals in aircraft production and operation is believed to make the Air Force now the principal consumer of chemical products among the Armed Forces.

The Armed Forces Chemical Journal is the official publication of the Armed Forces Chemical Association. The fact that an article appears in its columns does not indicate the approval of the views expressed in it by any group or any individual other than the author. It is our policy to print articles on subjects of interest in order to stimulate thought and promote discussion; this regardless of the fact that some or all of the opinions advanced may be at variance with those held by the Armed Forces Chemical Association, National Officers, and the Editors.

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VOLUME VIII.

MARCH-APRIL, 1954

NO. 2

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—National Park Service Photo

A REMINDER OF WASHINGTON, D. C. IN THE SPRING

“CHEMISTRY FLIES”

**Keynote for the 9th Annual Meeting of the A.F.C.A., May 20-21,
with the U.S. Air Force as Our Host; General LeMay To Speak**

As the JOURNAL goes to press it has just been learned that General Curtis E. LeMay, Commanding General Strategic Air Command, has accepted the invitation of President Munchmeyer to be the guest speaker at the Annual Banquet on May 21.

It is also learned that the Atomic Energy Commission and the Civil Defense Administration plan to have exhibits at the meeting.

The speaker list for the symposium on “Disaster Planning” is nearing completion. It includes the Hon. Val Peterson, Civil Defense Administrator, and Rear Admiral W. G. Schindler, U.S.N. Others will be the Chief Chemical Officer of the Army and representatives of the Air Force and the Dow Chemical Co.

In an inspiring letter to President L. W. Munchmeyer, reprinted in facsimile on the accompanying page, General Nathan F. Twining, Chief of Staff of the U.S. Air Force, has formalized acceptance by the Air Force of the role of host to the Association at its 9th Annual meeting to be held in Washington, D.C., on May 20-21.

In this letter General Twining takes cognizance of the theme or keynote for this gathering indicated by the words, “Chemistry Flies.”

This apt expression was coined by the Air Force officials who have been enthusiastically cooperating with Chairman Harry A. Wansker and his associates of the Program Committee.

Indeed, this planning has served to drive home and emphasize to all engaged in it, the far-reaching ties and dependence of aviation on the science of chemistry and chemical industry. A number of these vital links are given in the enclosure to General Twining’s letter listing “Typical Areas of Chemicals Applications in the Air Force.” Many of these direct or indirect tie-ins of chemistry with the hundreds of industrial products which enter into the production and operation of aircraft will be portrayed in an elaborate Air Force exhibit now being designed and to be fabricated at Wright-Patterson Air Force Base, Dayton, Ohio.

This Air Force exhibit carrying out the theme of “Chemistry Flies,” along with others, will be displayed in corridors of the Shoreham hotel where the Annual Meeting is to be held.

The request made to the Air Force to assume the role this year as host is in line with the general policy of the Association to so call upon one of the main components of the Armed Forces in connection with each Annual Meeting. As usual, however, this year the close bonds

of friendship and interest of the Association with the Chemical Corps of the Army, where the Association has its foundation roots, will also be emphasized. General E. F. Bullene, Chief Chemical Officer, has also written President Munchmeyer accepting the invitation of the Association for Chemical Corps participation in the meeting. An extensive Chemical Corps exhibit is being prepared.

A great deal of the Air Force participation in the meeting, including the exhibits, pertains to the field of activities of the Air Force Materiel Command, which is headed by Lt. Gen. Orval R. Cook, Deputy Chief of Staff, Materiel. Among the officials in this department of the Air Force with whom Mr. Wansker has been conferring are Col. Robert W. Green, Chief of the Materiel and Components Division in the Directorate of Industrial Resources. Also very active in assisting in the planning is Mr. Irving Poretz of the Materiel Component Division. Another department which has been most helpful in the planning is the office of Public Information of the Secretary of the Air Force. Among the officers of this office who have been assisting in the meeting plans are Col. Charles A. Brown, Lt. Col. Marvin Alexander and Lt. Col. Donald E. Perry. Col. Perry has been designated specifically as the contact officer for the A.F.C.A. meeting project.

As this article went to press it was expected that plans for the annual meeting would be finalized at the February meetings of the Program Committee and the A.F.C.A. Executive Committee. Col. Green, Col. Perry and Mr. Poretz planned to attend both of these sessions for further coordination of the program.

For the Chemical Corps of the Army, close liaison has been in effect through Capt. Malcolm M. Semple, Technical Liaison Officer of the Corps.

The First Day’s Program—May 20

Following registration proceedings on the morning of May 20, the first day, the entire delegation including members, their wives, and other guests, will proceed to the Pentagon for a briefing on the military outlook at the time as viewed by the Air Force.

After the briefing, the A.F.C.A. group will be taken to nearby Andrews Air Force Base where an extensive program is being prepared. This will include various static exhibitions and also an aerial demonstration of modern jet aircraft. The Ground Control Approach sys-

(Continued on Page 4)



DEPARTMENT OF THE AIR FORCE
OFFICE OF THE CHIEF OF STAFF
UNITED STATES AIR FORCE
WASHINGTON, D. C.

Letter From

AIR FORCE CHIEF OF STAFF

Colonel L. W. Munchmeyer, USAR
President
Armed Forces Chemical Association
2025 Eye Street NW
Washington 5, D. C.

Dear Colonel Munchmeyer:

The Air Force is honored to serve as host to the Armed Forces Chemical Association annual meeting in Washington, D. C., on 20-21 May 1954. Your kind invitation gives us an opportunity to demonstrate to your membership the applications of chemistry in the Air Force.

The vital role that chemistry plays in contributing to success in the Air Force mission has long been recognized. Accordingly, it is proposed that the Air Force will plan events and exhibits which will depict the broad scope of chemicals applications in aviation. For your information, areas representative of the proposed theme for this meeting, "Chemistry Flies", are indicated in the attached listing.

I sincerely hope that this year's annual meeting will prove to be a most successful event that will lead to a continuing beneficial association.

Sincerely,

N. F. TWINING
Chief of Staff, United States Air Force

Enclosure

TYPICAL AREAS OF CHEMICALS APPLICATIONS IN THE AIR FORCE

1. Synthetic Fluids — Lubricants, hydraulic fluids, low temperature greases, etc.
2. Propellant Chemicals — Assist take off units, guided missiles booster, experimental aircraft, new production processes.
3. Plastics — Jettisonable tanks; electronic components; piping; structural components; target aircraft; radomes; vision surfaces; honeycomb; armor guided missiles; special applications: insulating, electrical, thermal, dielectric, anti-electrostatic and optical.
4. Synthetic Fibers — Clothing, parachutes, textiles, etc.
5. Metal Bonding — Guided missile and aircraft production.
6. Shell Molding — Precision parts and components for aircraft.
7. Metals and Metal Processing — Titanium extraction; critical metals scrap recovery.
8. Aerial Photography — New methods for making optical glass, pyrotechnic illuminants, new developing processes (the Land Process), special energy developers, etc.
9. Fuels — Additives; high energy fuels.
10. Armament Chemicals — High velocity aircraft rockets.
11. Aeromedical Chemicals — Survival equipment and biologicals.
12. Chemical Warfare — Defensive material; incendiaries; smokes.
13. Protective Coatings — Anodizing.
14. Conservation of Critical Materials.
15. Fire Fighting Chemicals — Crash trucks; extinguishing agents.
16. Industrial Gases — Aluminum welding.
17. Rubber and Rubber Products — Thiokol; self sealing tanks.
18. Packaging — Engines; missiles.

GENERAL N. F. TWINING



General Twining was born at Monroe, Wisconsin, on October 11, 1897. Following service in the Oregon National Guard, he entered West Point and was commissioned 2nd Lieutenant of Infantry in November, 1918. He transferred to the Air Service in 1926.

General Twining was promoted to Brigadier General (temporary) in February, 1942, and in July of that year was sent overseas as Chief of Staff of the Allied Forces in the South Pacific. In February, 1943, he was promoted to Major General, and in July was assigned by Admiral W. F. Halsey as Commander, Aircraft Solomon Islands, and placed in tactical control of all Army, Navy, Marine, and Allied Air Forces in the South Pacific.

In November, 1943, General Twining assumed command of the 15th Air Force in Italy, and the following January became commander of the Mediterranean Allied Strategic Air Forces in addition to his other duties.

In July, 1945, General Twining returned to the U.S. and a month later assumed command of the 20th Air Force in the South Pacific. Returning to the U.S. in October, 1945, he became Commanding General of the Air Material Command with Headquarters at Wright Field. In October, 1947, he was named commanding general of the Alaskan Department.

In July, 1950, he was assigned Acting Deputy Chief of Staff for Personnel at Air Force Headquarters in Washington, D.C., and in October 1950 was appointed Vice Chief of Staff of the Air Force with the temporary rank of General. He was appointed Chief of Staff of the Air Force on June 30, 1953.

General Twining's awards include the Distinguished Service Medal, the Navy Distinguished Service Medal, the Legion of Merit, the Distinguished Flying Cross, the Bronze Star Medal, and the Air Medal.

ANNUAL MEETING

(Continued from Page 2)

tem for landing of aircraft in inclement weather will be demonstrated; also, it is expected, that Civil Defense air warning procedures will be shown. The WAF contingent at Andrews will be prepared to show their part in the operation of the Base as a feature of the program.

A buffet luncheon will be served at the Officers' Club for which there will be a separate charge of \$1.50 per person. The group will be returned to the Shoreham by 4:30 or 5:00 P.M., thus leaving the remainder of the afternoon and evening for the visitors to foregather and view the exhibits on display at the Shoreham Hotel.

The A.F.C.A. Directors will hold their business session including the election of new officers after dinner on the night of the 20th. Preparations for the election of new Directors-at-Large who will be elected by the membership of the A.F.C.A. by mail balloting are already under way by the A.F.C.A. Headquarters. Letters calling for nominations have been sent to the various chapters.

Second Day's Activities—May 21

The second day's program will open with the general meeting of the Association for all members when announcement will be made of the newly elected officers and plans for the forthcoming year.

The morning session will be followed in the afternoon by the Symposium which will consume the rest of the day and which promises to be one of the most interesting and important presentations ever given at an A.F.C.A. meeting. The subject for this series of talks and discussions is "Disaster Planning," a topic which is of current interest in both Government and industrial circles. The opening talk, it is planned, will be given by the Chief Chemical Officer of the Army indicating hazards in connection with the need for advance planning to cope with either war-caused or other forms of disaster. However, the subject matter will not be limited to war problems but will include also consideration of accidents such as explosions at manufacturing plants, accidents involving dangerous materials in transit and will also take into account protective planning against disasters due to tornados, floods, earthquakes, or other natural causes.

Additional speakers will deal with various aspects of this subject, pose specific problems and suggest means of coping with them. One of these speakers, it is expected, will be from the Air Force, one from the Navy, and one from a representative of the chemical industry who will discuss the subject with respect to a specific chemical plant and its situation. Under consideration also, are presentations in this field by other government agencies concerned including the Civil Defense. Both the General Meeting and the Symposium will be held in the Main Ballroom of the Shoreham.

At 6:00 P.M., following the Symposium, there will be a reception in the West Ballroom by the newly elected President of the A.F.C.A. A number of especially invited guests will also be present in the receiving line. Cocktails will be served.

The Annual Banquet

From the reception, the members and their guests will repair to the Terrace Dining Room for the Annual Banquet. The speaker for this event will be a representative of the Air Force. Advance booking of reservations for the banquet by group-member companies is already un-

der way. The following companies have sent in reservations:

United-Carr Fastener Corporation.
Rohm & Haas Company.
International Salt Company, Inc.
Casco Products Corporation.
Buffalo Electro-Chemical Company, Inc.
The H. K. Ferguson Company.
Niagara Alkali Company.
Koppers Company, Inc.
Armour & Company.
Hercules Powder Company.
The Blaw-Knox Construction Company.
Bridgeport Brass Company.
The Ralph M. Parsons Company.
Union Carbide & Carbon Corporation.
Zenith Plastics Company
Philco Corporation
Walter Haertel Company
Allied Chemical & Dye Corporation
General Aniline & Film Corporation
Goodyear Tire & Rubber Company
Arthur D. Little, Inc.
Ferro Corporation

Special Program for Ladies

During the second day of the meeting, while the members are concerned with the General Meeting and Symposium, there will be a separate program of visits for their wives. A tour of selected portions of the White House has been arranged through the courtesy of Mrs. Eisenhower's secretary. For this occasion an advance list of the names and addresses of all the ladies who will attend will be required. It is recommended that all members whose wives desire to take advantage of this feature submit their names and addresses to Association Headquarters well in advance of the meeting and, if possible, by April 15. The group will be taken by chartered buses to the west entrance of the White House so as to arrive there at 8:45 a.m. Following the White House Tour the ladies will have opportunity to visit some of the foreign embassies, plans for which feature of the program are in progress.

Plans For Exhibits

A specially noteworthy feature of this meeting of the Association will be the exhibits. In addition to the space allocated for the military exhibits, there is available considerable booth space which is being offered on a "first-come" basis to group member companies for industrial exhibits which bear definitely on the National Defense. It is proposed in this connection to produce a souvenir program in which the exhibit-participating companies will be offered space for description and explanation of their exhibits. Salutation notices and contributions from A.F.C.A. Chapters of a page or less in the program are also contemplated.

The Program Committee wishes to emphasize the importance of early booking of hotel reservations in view of the large influx of visitors to Washington in the spring season. Reservations should be made with hotels direct. The Shoreham will give special rates to A.F.C.A. members. There are, of course, many fine hotels in Washington to choose from.

Charges for the meeting are planned as follows: Registration, for all attending sessions, \$2.00; Reception & Banquet \$15.00 (For active military and Gov't., employees \$10.00); Luncheon at Air Base \$1.50; For chartered bus on ladies tour, \$1.75.

ARMED FORCES DAY

In a White House ceremony, President Eisenhower on January 15, proclaimed Saturday, May 15, 1954, Armed Forces Day—a day devoted to honoring the men and women of the Armed Forces for their contribution to the preservation of personal freedom as a "Power for Peace."

The President stated that the Armed Forces "are actively engaged at home and overseas, in upholding and defending our democratic way of life as opposed to ideologies which seek to destroy the basic principles of freedom cherished by this Nation." He invited the Governors of the States, Territories and possessions of the United States to provide for the celebration of Armed Forces Day in a manner designed to pay suitable honor to the members of the Armed Forces.

The President also requested private citizens to display the U.S. flag and to show their recognition of the gallantry, sacrifice and devotion to duty of the men and women in the Armed Forces by cooperating in local observances.

As Commander-in-Chief of the Armed Forces, the President directed the Secretary of Defense, and the Secretaries of the Army, Navy, Air Force and Treasury, on behalf of the Coast Guard, to mark the day with appropriate ceremonies and to cooperate with civil authorities in arranging suitable observance of the occasion.

Witnessing the signing of the Presidential Proclamation were:

ANDERSON, Robert B., Secretary of the Navy; CARNEY, Robert B., Admiral, Chief of Naval Operations; CRIST, R. F., JR., Colonel, Director of Information, Marine Corps; DUNTON, James G., Major, USAF, Armed Forces Day Coordinator OPI-OSD; HILL, T. B., Rear Admiral, Commandant, Potomac River Naval Command; HUMPHREY, George, Secretary of the Treasury; KING, George J.,



President Eisenhower hands Secretary of Defense Charles E. Wilson the annual Armed Forces Day Proclamation, designating May 15 as Armed Forces Day, after signing it at a White House ceremony attended by high defense department officials, including the Joint Chiefs of Staff.

Major, Marine Corps Liaison Officer for Armed Forces Day; McFARLAND, K. D., Major, Air Force Liaison Officer for Armed Forces Day; MORINE, L. H., Captain, Coast Guard Liaison Officer for Armed Forces Day; MUDGETT, G. C., Major General, Chief of Information, USA; O'NEILL, Merlin, Vice Admiral, Commandant, Coast Guard; PARISH, E. W., Captain, Navy Liaison Officer for Armed Forces Day; PARKS, Lewis S., Rear Admiral, Chief of Information, USN; RADFORD, Arthur W., Admiral, Chairman, Joint Chiefs of Staff; RIDGWAY, Matthew B., General, Chief of Staff, USA; ROSS, Stoyte O., Commander, Headquarters Command Air Force; SCHOOLEY, C. Herschel, Director of Public Information, OSD; SEATON, Fred R., Assistant Secretary of Defense; SHEPHERD, L. C., JR., General, Commandant, Marine Corps; SLEZAK, John, Under Secretary of the Army; SMITH, Sory, Major General, Director, Air Force Information Services; TALBOTT, Harold F., Secretary of the Air Force; TWINING, N. F., General, Chief of Staff, Air Force; WILSON, Charles E., Secretary of Defense; WRIGHT, E. K., Major General, USA, Armed Forces Day Area Commander, Washington.

CHEMICAL CORPS REQUIREMENTS

The Chemical Corps of the Department of the Army has been investigating the many and varied phases of Chemical, Biological and Radiological (CBR) warfare. However, a continuing requirement exists within the Corps for new and improved techniques or methods and items related to defensive and offensive aspects of the Corps mission in these fields. The Chemical Corps welcomes any suggestions which will aid in meeting this continuous requirement.

Random examples of needs include: new methods for protection of the respiratory tract against inhalation of toxics; new and improved absorbents as replacement for activated charcoal in protective masks; rapid detection methods and devices for determining possible airborne CBR agents as well as for the collective defense of large bodies of troops against CBR attacks; improved filters for the removal of particulate agents from aerosols, including devices for their sizing and counting before and after removal; methods and materials for neu-

tralizing CBR agents without harm to the user or to the material being decontaminated; and individual protective measures, including clothing, by physical and/or chemical means against toxic liquids, vapors, and radiation.

Also of interest to the Chemical Corps are offensive CBR agents which will deter an enemy from completing his assigned mission. New methods and means of accomplishing the assigned mission of the Corps are desired.

The Chemical Corps wishes to point out, however, that suggestions and proposals leading to improved means of defensive and offensive CBR warfare need not be confined to the examples cited above. All suggestions or proposals may be addressed to the Commanding General, Chemical Corps Research and Engineering Command, Army Chemical Center, Maryland, where they will be given careful consideration. Patent rights are protected under existing United States laws and statutes. (*Chemical Corps release.)



—U.S. Army Photo
GEN. CHARLES E. BOLTE
 Vice Chief of Staff of
 the Army

CHEMICAL ENGINEER ATTAINS HIGH ARMY POST

General Charles L. Bolte, Army Vice Chief of Staff, will be a leading contributor to these pages in the near future.

General Bolte was graduated from Armor Institute of Technology (now Illinois Institute of Technology) in 1917 with a Bachelor of Science Degree in Chemical Engineering and in 1944 was awarded the Degree of Doctor of Engineering by the same institution. While attending college General Bolte attended three student training camps, and at the completion of the Plattsburg Camp in 1916 was given a reserve commission of Infantry in the Army. General Bolte was employed as a Chemical Engineer upon his graduation from college. In the fall of 1917, he was commissioned in the Regular Army as a Second Lieutenant of Infantry. He had an outstanding record as a regimental staff officer and a company commander in the 4th Division during that war and was wounded in action. Between the two wars, he was given increasingly important assignments with both troops and staff and was an instructor at the Infantry School and later at the Army War College. During World War II he distinguished himself as Commanding General of the 34th Infantry Division in combat on the Arno River, Italy, which he led through the rupture of the Gothic Line, in the Apennines, the breakthrough and capture of Bologna, and the surrender of the Axis Forces in Italy.

After the war, General Bolte was Deputy Chief of Staff of the Army, following which he took command of the Seventh Army in Germany and was subsequently promoted to four-star rank and command of USAREUR, in which position he commanded all American Army troops, installations, and activities in Western Europe. In this latter po-

sition he administered a budget of between 3 and 4 billion dollars, including approximately 1 billion dollars for offshore procurement. The ramifications of his administration of this large command can be appreciated when it is realized that in addition to the purely military aspects of his command, he was responsible for the operation of schools for 23,000 American children, dependents of American military and civilian personnel in Europe, and the Army exchanges for all troops in Europe, which operation was of a magnitude of several hundred million dollars a year.

Dr. Freudenberg, Dean of Chemistry at the University of Heidelberg, became one of his close friends and was a German leader with whom he became closely associated. He addressed several German assemblies in their native language while in command.

When General Matthew B. Ridgway became Chief of Staff, U. S. Army, he recognized in General Bolte a commander who not only had great leadership ability in the field but one who possessed great administrative ability, and so recalled him to the United States to become the new Vice Chief of Staff during this period of great emphasis on efficiency in Government and business-like methods in the administration of the Army.

The Journal believes that members of the Association and our other readers will be very pleased to read an article by General Bolte which will appear in an early issue.

General Bolte has been awarded the Distinguished Service Medal, Silver Star, Legion of Merit, and the Purple Heart by our Government. His foreign decorations include the Order of the Bath (Great Britain), the Order of Commander SS Maurizio e Lazzaro (Italy) and the French Officer of the Legion d'Honneur, the French Croix de Guerre with palm, the Brazilian Medalha de Guerra and the Italian Military Order of Savoy.

—Editor.

NEW BW MANUAL

"Civil Defense Against Biological Warfare," F.C.D.A. Publication, TM-11-10, November 1953, 37 pages. Superintendent of Documents, U.S. Government Printing Office, Washington 25, D.C. Price 20 cents.

This publication analyzes the threat from biological warfare (BW) against this country and outlines appropriate measures to prepare for defense against it. It modifies and supplements material on BW defense in the earlier Federal Civil Defense Administration publication, "Health Services and Special Weapons Defense," AG-11-1.

The manual consists of four parts, namely, an appraisal of biological warfare, and programs for defense of man, his domestic animals and crops. While it is recognized that extreme

differences of opinion exist concerning the effectiveness of BW, and of defensive measures to counteract it, it is concluded that "a determined enemy can and may attack man, animals, or crops effectively by deliberately spreading pathogenic agents, covertly or overtly, alone or in combination with other weapons."

In considering defensive measures, the new manual places emphasis on the strengthening of current public health measures, including prompt reporting of disease, communicable disease control, sanitation and emergency medical services. The roles of local, State and Federal agencies are cited in planning for defense and in establishing and operating programs of training to provide a supply of competent professional and technical BW defense personnel.

GROUP AND SUSTAINING MEMBERS

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 Aerial Products, Inc., Elkton, Md.
 Air Reduction Company, Inc., New York, N. Y.
 Allen Products Corp., Nashville, Tenn.
Allied Chemical & Dye Corporation, New York, N. Y.
 American Aniline Products, Inc., New York, N. Y.
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 Glyco Products Company, Inc., Brooklyn, N. Y.
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 Lambert Pharmacal Company, St. Louis, Mo.
 Little, Arthur D., Inc., Cambridge, Mass.
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 Sheller Mfg. Co., Dryden Rubber Div., Chicago, Ill.
 Sherwin-Williams Company, The, Cleveland, Ohio
 Shwayder Bros., Inc., Denver, Colo.
 Standard Oil Company (Indiana), Chicago, Ill.
 Standard Oil Development Co., New York, N. Y.
 Standard Products Company, The, Cleveland, Ohio
 Stauffer Chemical Company, New York, N. Y.
 Stewart Die Casting, Chicago, Ill.
 Sun Oil Company, Philadelphia, Pa.
 Tranter Manufacturing, Inc., Lansing, Michigan
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 Union Carbide & Carbon Corp., New York, N. Y.
 United Carr-Fastener Corp., Cambridge, Mass.
 United States Rubber Company, New York, N. Y.
 Universal Match Corp., Ferguson, Mo.
 Victor Chemical Works, Chicago, Ill.
 Vulcan Copper & Supply Co., The, Cincinnati, Ohio
 Wallace & Tiernan Products, Inc., Newark, N. J.
Westvaco Chemical Division, New York, N. Y.
 Witco Chemical Company, Chicago, Ill.
 Wyandotte Chemical Corp., Wyandotte, Mich.
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Companies listed in bold face type are Sustaining Members.

GENERAL BULLENE TO RETIRE

Major General E. F. Bullene, the Army Chemical Corps' ninth Chief and Honorary President of the A.F. C.A., will retire March 31 after more than 39 years' service, over thirty-six years of which was as a commissioned officer.

Thirty-six years ago, this March, as a lieutenant in the 15th Cavalry and as one of the first 100,000 of the A.E.F., Bullene was enroute to France. His transport was short of ship's officers, and since he was a graduate of the U.S. Naval Academy, he was pressed into sea service. He holds the distinction of being one of the few Army officers who have stood a naval officer's watch while wearing Cavalry boots and spurs.

Egbert Frank Bullene—known as "Bub" to his intimates—was born in Salinas, Monterey County, California, in 1895. His father resides on the Monterey Peninsula where General Bullene expects to make his home.

In France, in World War I, he was detailed, at his request, in the Field Artillery and saw action in the Aisne-Marne, Vesle, St. Mihiel, and Meuse-Argonne campaigns. He was

awarded the Purple Heart, and during the Argonne fighting he took over a Field Artillery battery when its commander was killed in action. His leadership won for him a temporary promotion to captain at the age of twenty-four. General Bullene is currently the last member of the Chemical Corps who saw combat service in World War I. In that war he was on the receiving end of several German gas attacks as well as on the sending end as a battery commander.

Between 1919 and 1925, he served in the Cavalry including duty as a troop commander in the 1st Cavalry Division. In 1925, he obtained a detail in the Chemical Warfare Service, and in 1928, he transferred permanently to that branch.

Prior to World War II, General Bullene served as a Chemical Corps officer in the Philippines and China, as well as various stations in the United States. At one time or another, he commanded every company in the old 1st Gas Regiment, now the 2d Chemical Weapons Battalion. During World War II he served as Commanding General of



the Chemical Corps Unit Training Center, Chemical Officer of the Armored Force, Commanding General of the San Jose project, and also had service in both the European and Far East Theaters.

General Bullene is a graduate of the Chemical Corps School, The Command and General Staff College, where he was also an instructor, the then Army Industrial College, and the Army War College.

While serving as Commanding General of the Army Chemical Center (Continued on Page 19)

A MESSAGE FROM OUR A. F. C. A. PRESIDENT

Radiological Warfare

Radiological warfare is the use of radioactive agents or materials to cause radiation sickness in man, and, if the exposure at sufficient intensity continues long enough, to cause death. It has much in common with chemical and biological warfare in that radioactive materials can be used to obtain the effect desired by means other than through the effect of flying missiles. In radiological warfare, there are no torn bodies and those who recover are not left with permanent injuries. They recover completely. Buildings, structures, homes, schools, churches, hospitals and factories remain intact.

We know that any potential enemy could, at least in theory, use radioactive materials as casualty-producing agents, or as contaminants to force the evacuation of selected areas. It is also an obviously established fact that many of the possible radiological materials can be prepared by any nation having access to certain raw materials.

The atomic pile is a principal source of radiological materials in the quantities necessary for warfare. The principle of the pile is so generally known that any nation with access to raw materials, principally uranium, can, if it so desires, construct and operate an atomic pile for production of radioactive fission materials. These could be produced either as by-products of atomic energy production or simply as the end product for radiological weapons. As is generally known, our allies have access to uranium. So does the Soviet Union. Other countries with supplies of this important material are Belgium, Czechoslovakia, and Russia. Any of these countries is potentially capable of producing radiological warfare agents.

As in the case of chemical and biological warfare, Civil Defense and Plant Protection groups should give full consideration to defense against this special weapon.

—L. W. MUNCHMEYER.

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WITCO gears production to meet needs of government and industry

To assist in the record-breaking job of producing the needed civilian goods along with the chemicals required for defense production—Witco has continually expanded its facilities and increased production . . .

Expanded research facilities, increase in plant and basic chemical production capacity at Chicago, Ill.

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SOME DILEMMAS OF DEFENSE

Condensed for The Journal from an Address by Dr. John A. Hannah, Assistant Secretary of Defense (Manpower and Personnel) Before the Lansing Economic Club, Lansing, Michigan, January 14, 1954.

The high cost of national defense today requires that our citizens should be fully informed as to the nature of the international problem which requires these expenditures and the means by which the Defense Department is seeking to maintain balance between military strength and economic stability. They are the indivisible twins of national security and survival.

The Department of Defense is spending two-thirds of all federal tax revenues in the current fiscal year, and will be spending a substantial portion of them in the years ahead. This situation has developed, not from choice, but because we are living in a world in which our country and our way of life are under constant threat. We know that we must be strong militarily if we are to continue to be free. To develop and maintain sufficient military strength requires the expenditure of enormous sums of money, money which could be spent to much better purpose were the situation less menacing than it is. Sources of revenue which might otherwise be utilized by state and local governments have been pre-empted and retained by the federal government because of the overriding necessity to provide an impregnable defense for our country. As the President has pointed out so dramatically, money which might go for schools and homes and hospitals and highways must be used for planes and guns and ships instead.

Knowing all of these things, we must face the fact that our economic structure, and those of the free nations associated with us, are prime targets in the cold war, targets which must be protected and defended as surely as a vital air field or a naval base in time of a shooting war. We must recognize that there are economic limits beyond which no country dare go in building its military defenses. We must recognize that it would not be impossible for a nation to win on the battlefield, and still lose a war through the collapse of its economic system into the chaos in which Communism flourishes. Our experiences and observations in other lands since the end of World War II make that painfully clear.

Must Gear For a Long Pull

Under the circumstances, what is demanded is that we gear our economic and military policies for a long pull, paying our way as we go if possible. At the same time, we must prepare to go into action im-

mediately and effectively if we should be the victims of a sudden attack. Out of this double demand—for a long-time defense and an emergency defense—arises many of the dilemmas with which the Administration struggles day after day.

To answer any doubts I may have raised let me say that I am confident that we can provide adequate national security for our country within the limits of our national resources.

Manpower is at the heart of many of the difficulties encountered in developing a sound national defense. Defense is constructed of three principal components—men, materiel, and money. But they are not equal in importance, for it takes men to use the materiel and to spend the money wisely, as well as to use the guns and planes and ships.

One basic consideration we must always keep in mind is that we do not have an unlimited supply of manpower in this country. This comes as news to many Americans, who have always thought that the United States has an abundance of everything. Actually, we do not have enough manpower to allow us complete freedom in defense planning, and that fact must be kept in mind, as well as the necessity for equitable distribution of men between the needs of the military and those of the civilian economy.

The Committee on Manpower Resources for National Security recently pointed out that changes in birth rates have affected significantly the number of young men who reach the age of military service each year. The number of men of 18 years of age declined steadily from 1940 to 1953. Although there was a slight upturn in 1953, there were still 150,000 fewer men who were 18 years of age than there were in 1940. Within that same period—1940 to 1953—the total population of the United States increased by more than 27 million persons.

These statistics reflect only the numbers of men coming of age, militarily speaking. But the figures on the whole prime military manpower age group—those men aged 18 through 25—are equally surprising. The statisticians tell us that the number of men in that age group—18 to 25—will be about 100,000 fewer in 1960 than they were in 1940, even though the total population will have grown by approximately 40 million in those two decades.



—U.S. Army Photo

THE HON. JOHN A. HANNAH

The Hon. John A. Hannah, Assistant Secretary of Defense (Manpower and Personnel), was for 11½ years prior to this appointment president of Michigan State College. He was graduated from that college in 1923 with a B.S. degree, joined the college staff as an extension specialist in poultry and subsequently achieved international recognition in that field. In 1935, he became secretary of the Michigan State Board of Agriculture. In 1941 he was awarded an honorary degree as Doctor of Agriculture by Michigan State College and in 1944 an honorary Doctor of Laws degree by the University of Michigan. In 1952, the University of Ryukyus on Okinawa awarded him an honorary degree as Doctor of Humanities.

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"More Defense With Fewer Men"

Here we find the elements of one of the dilemmas of defense, which is, how to provide a more effective defense with fewer men. One factor in favor of an adequate solution is that combat effectiveness is being stepped up steadily by the use of new weapons and new techniques by comparatively fewer, but more highly trained men.

The Department of Defense can only counsel and consult on the distribution of skilled manpower resources, but it has primary responsibility for the utilization of manpower efficiently and economically within the defense establishment. Indeed, if there were no other considerations, it would be driven to seek more efficient use of manpower by the very shortage of both raw and trained manpower I have mentioned.

It is good to be able to report that substantial progress has been made towards more efficient utilization of the manpower available to us. Some of the benefits have been reflected in the lower draft calls now in force and likely to be in force. But so many factors enter into the determination of draft calls that it is not a reliable barometer, by any means.

But there are several positive pieces of evidence that manpower is being used more efficiently.

On January 31, 1953, there were about 2,556,000 civilians on the total Federal payroll, of whom about 1,330,000 were employed by the Department of Defense, the nation's largest employer. On November 30, 1953, ten months later, the total number of civilians on the Department of Defense payroll had been reduced by 145,000.

CORRECTION

The JOURNAL sincerely regrets after this issue was off the press it was discovered that through error the photographs on pages 10 and 12 had been transposed. The photograph on page 10 is that of The Hon. Sterling Cole and the photograph on page 12 is that of The Hon. John A. Hannah.

—Ed.

\$3,500 annually, which seems reasonably conservative, then we have accomplished what would amount to a saving of more than \$525,000,000 on an annual basis, surely a sizable contribution to reducing the cost of government.

Further Reduction Next Year

Our manpower budget for the next fiscal year will recommend further reductions in civilian and military personnel costs in excess of one billion dollars per year. This figure includes not only the savings in salaries and wages, but reflects savings in training costs, outfitting, travel, clothing, housing and food as well.

As another example of more efficiency in utilizing the manpower available to us, I cite the experience of the Air Force. As you may recall, there was considerable public interest and some alarm about a year ago when reductions were being made in appropriations for the Air Force. Secretary Wilson made it plain at the time that there would be no reduction in combat effectiveness but actually a gain.

To those who were skeptical, it is a pleasure to report that the personnel of the Air Force, which numbered 985,000 men and women on July 1, has been reduced to approximately 925,000. We will end this fiscal year with far fewer men than the reduced budget authorizes and

with combat strength increased from 95 wings to 115 or 116 wings. The Air Force now feels able to maintain an eventual maximum combat strength more effective than previously contemplated, with more than 200,000 fewer men than originally planned.

The Army meanwhile was able to eliminate a total of 54,171 places in its Tables of Organization, the Navy to eliminate 9,470 places, the Air Force 74,497 places, and the Marine Corps 22,035 places. With the full cooperation of the military services, it has been possible for the Department of Defense to report to the Congress a total reduction of 160,173 places from the Tables of Organization of the military units now in service. This has been accomplished without any impairment of combat efficiency.

The principles of conservation of manpower can be applied to large groups of men as well as to single individuals, and are being so applied. For example, it has been found possible to withdraw two of our infantry divisions from Korea because South Korean troops have been trained to take their places. This represents a substantial saving in money as well as manpower without weakening our defensive strength. In fact, we gain strength in the long run, for the power of a friendly ally has been built up, and our own troops are freed for such other disposition as our commanders decide to make of them.

The very nature of modern warfare, with its demands for highly-skilled technicians produced only by long months of training, introduces some serious complications in defense planning. Our Army, for example, is made up of men who have enlisted or re-enlisted, and men who have been inducted by the Selective Service for two years. The proportion is not a comfortable one, for 60% are inductees, and only 40% enlistees.

The Department of Defense has a great interest in finding ways to keep men in the military service. Our armed forces are losing trained and experienced officers and men in such numbers as to be disturbing. The so-called "hard core" of the services—the professionals who know how to do their jobs now, and would form the base for any expansion in time of emergency, is far too small for comfort.

Problem of an Adequate Reserve

Finally, let me turn to the difficulty of building an adequate reserve force to back up those serving actively in the Army, Navy, Air Force and Marine Corps. It has long been a principle of American security that we should have a standing armed force of a minimum size, just large enough to meet emergency situations, and that this regular force should be backed up by reserves of citizen soldiers, ready to take up arms as a second line of defense against an enemy. In our history, we always have had time to bring these reserves up to a peak of training before calling them into combat.

Modern warfare has forced a change in our traditional conception of the role of the reserve. For one thing, if any aggressor should attack, there might be little or no time to devote to the training of reserves. For another, much technical training is required in this age of automatic weapons, radar, and other weapons and devices. It is essential that the reserve be made up of men who have had a high degree of training in the course of previous military experience.

Thinking on this matter has crystallized to some extent. Everyone agrees that we must somehow come up with a plan which will guarantee to the active forces that a reserve force ready to fight on short notice will be available if required. It is obvious that there must be a constant process of screening those in our reserve units

(Continued on Page 19)

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It is good to be able to report that substantial progress has been made towards more efficient utilization of the manpower available to us. Some of the benefits have been reflected in the lower draft calls now in force and likely to be in force. But so many factors enter into the determination of draft calls that it is not a reliable barometer, by any means.

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On January 31, 1953, there were about 2,556,000 civilians on the total Federal payroll, of whom about 1,330,000 were employed by the Department of Defense, the nation's largest employer. On November 30, 1953, ten months later, the total number of civilians on the Department of Defense payroll had been reduced by 145,000. The preliminary figures show that as of the end of December, the number cut off the Department of Defense payroll since January 31 was approximately 150,000. Other Federal departments, too, have effected personnel reductions in conformity with the pledges of President Eisenhower to the American people. But I am particularly proud of the fact that the Department of Defense, employing slightly more than half of all Federal workers, has effected approximately 75% of the payroll economies. This has been effected principally by failing to fill positions when they became vacant. As yet we have noticed no impairment of efficiency. Of course, such a rate of reduction cannot go on forever, but if we assume that the average salary of those replaced was \$3,500 annually, which seems reasonably conservative, then we have accomplished what would amount to a saving of more than \$525,000,000 on an annual basis, surely a sizable contribution to reducing the cost of government.

Further Reduction Next Year

Our manpower budget for the next fiscal year will recommend further reductions in civilian and military personnel costs in excess of one billion dollars per year. This figure includes not only the savings in salaries and wages, but reflects savings in training costs, outfitting, travel, clothing, housing and food as well.

As another example of more efficiency in utilizing the manpower available to us, I cite the experience of the Air Force. As you may recall, there was considerable public interest and some alarm about a year ago when reductions were being made in appropriations for the Air Force. Secretary Wilson made it plain at the time that there would be no reduction in combat effectiveness but actually a gain.

To those who were skeptical, it is a pleasure to report that the personnel of the Air Force, which numbered 985,000 men and women on July 1, has been reduced to approximately 925,000. We will end this fiscal year with far fewer men than the reduced budget authorizes and

with combat strength increased from 95 wings to 115 or 116 wings. The Air Force now feels able to maintain an eventual maximum combat strength more effective than previously contemplated, with more than 200,000 fewer men than originally planned.

The Army meanwhile was able to eliminate a total of 54,171 places in its Tables of Organization, the Navy to eliminate 9,470 places, the Air Force 74,497 places, and the Marine Corps 22,035 places. With the full cooperation of the military services, it has been possible for the Department of Defense to report to the Congress a total reduction of 160,173 places from the Tables of Organization of the military units now in service. This has been accomplished without any impairment of combat efficiency.

The principles of conservation of manpower can be applied to large groups of men as well as to single individuals, and are being so applied. For example, it has been found possible to withdraw two of our infantry divisions from Korea because South Korean troops have been trained to take their places. This represents a substantial saving in money as well as manpower without weakening our defensive strength. In fact, we gain strength in the long run, for the power of a friendly ally has been built up, and our own troops are freed for such other disposition as our commanders decide to make of them.

The very nature of modern warfare, with its demands for highly-skilled technicians produced only by long months of training, introduces some serious complications in defense planning. Our Army, for example, is made up of men who have enlisted or re-enlisted, and men who have been inducted by the Selective Service for two years. The proportion is not a comfortable one, for 60% are inductees, and only 40% enlistees.

The Department of Defense has a great interest in finding ways to keep men in the military service. Our armed forces are losing trained and experienced officers and men in such numbers as to be disturbing. The so-called "hard core" of the services—the professionals who know how to do their jobs now, and would form the base for any expansion in time of emergency, is far too small for comfort.

Problem of an Adequate Reserve

Finally, let me turn to the difficulty of building an adequate reserve force to back up those serving actively in the Army, Navy, Air Force and Marine Corps. It has long been a principle of American security that we should have a standing armed force of a minimum size, just large enough to meet emergency situations, and that this regular force should be backed up by reserves of citizen soldiers, ready to take up arms as a second line of defense against an enemy. In our history, we always have had time to bring these reserves up to a peak of training before calling them into combat.

Modern warfare has forced a change in our traditional conception of the role of the reserve. For one thing, if any aggressor should attack, there might be little or no time to devote to the training of reserves. For another, much technical training is required in this age of automatic weapons, radar, and other weapons and devices. It is essential that the reserve be made up of men who have had a high degree of training in the course of previous military experience.

Thinking on this matter has crystallized to some extent. Everyone agrees that we must somehow come up with a plan which will guarantee to the active forces that a reserve force ready to fight on short notice will be available if required. It is obvious that there must be a constant process of screening those in our reserve units

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REPRESENTATIVE COLE ON CIVIL DEFENSE

Summary of remarks prepared by Representative Sterling Cole (R-N.Y.), Chairman of the Joint Committee of Congress on Atomic Energy, for delivery at the Civil Defense Award to the Endicott Johnson Company in Johnson City, New York, December 17, 1953.

Fifty years ago today man first flew. In less than the span of one lifetime, the airplane has become a Dr. Jeckyl and Mr. Hyde which affects each one of our lives.

On the one hand, it has become our swiftest means of mass transportation and time-wise has reduced the world to the size of a single nation in 1953. In times of disaster it is an angel of mercy. As a research tool it has taught us much about our atmosphere and the weather. It sprays our crops and forests. It is rapidly becoming a major transport medium for valuable, fragile, or perishable cargo, and as a supplier to remote areas it has no peer. In the brief span of fifty years, it has done more for the good of all of us than the Wright Brothers ever foresaw in their wildest dreams.

But like all material things, it has capabilities for evil as well as good. As an engine of war it has overshadowed all of its companions in modern man's vast arsenal of weapons. When coupled with atomic and hydrogen bombs, it can bring, in a blinding flash and with little or no warning, the four horsemen of the apocalypse to the doorstep of any one of us.

Atom, a Power For Good and Evil

The atom, like the airplane, is developed at a fearful pace. It too has great powers for both good and evil. To date, it has reached its highest state of development as a weapon of war, but I firmly believe it too will be one of the greatest benefactors in the lives of our children.

Your effective civil defense program at Endicott Johnson will help to insure these benefits to our children. It is part of the shield which protects us all from atheistic communism while the peaceful side of the atom is being developed and perfected in the laboratories of America.

As citizens living some distance from large cities—Albany and Rochester are 150 miles away; New York, Philadelphia, and Buffalo just under 200—you may think that your major civil defense problem will arise as a result of a local attack on key industrial plants in the Triple Cities area. I should like to suggest, however, some problems which an attack or the threat of an attack on our major cities would present, and the important role which you would be called upon to play. I refer to the heavy burden which will be placed on the surrounding countryside if one of our great cities is hit.

In commenting on the Hiroshima disaster, the U.S. Strategic Bombing Survey states:

"... There was no organized activity. The people seemed stunned

*This paper was made available to the Journal by Congressman Cole through President Munchmeyer, of the AFCA, a resident of Congressman Cole's district in New York State.

by the catastrophe and rushed about as jungle animals suddenly released from a cage. Some few apparently attempted to help others from the wreckage, particularly members of their family or friends. Others assisted those who were unable to walk alone. However, many injured were left trapped beneath collapsed buildings as people fled by them in the streets. Pandemonium reigned as the uninjured and slightly injured fled the city in fearful panic . . . there were physically intact teams on the outskirts of the city which did not function. Panic drove these people from the city just as it did the injured who could walk or be helped along."

Psychological Effects of A-Attack

In Japan, under atomic attack, there were indications of a feeling of utter helplessness evoked by the impact of the violent physical concussion. And then, after emotional recovery began, there took place a second emotional shock, produced by the inescapable sight of mutilated human beings.

Among those who were at the periphery of the target cities and who escaped the full physical violence of the explosion, the primary emotional stimulus seems to have been the human devastation. Many people located in towns several miles away from the target cities were acutely disturbed by the casualties inflicted by the atomic weapon. Apparently, it was not simply the large numbers of casualties that had a powerful effect upon those who witnessed them, but also the specific character of the injuries, particularly the grossly altered physical appearance of persons who suffered severe burns.

Available sources of information consistently indicate that a dominant reaction to the bombing was acute anxiety. In some cases, the acute emotional disturbance took the form of profound apathy and depression. In others, feelings of deep hopelessness and pessimism prevailed.

Fear reactions persisted among a sizable proportion of the population for many days and possibly weeks after the atomic bombings. Anxiety-laden rumors circulated among the survivors during the post-disaster period.

This is what happens to a people totally unprepared psychologically for such an attack. Their civil defense program was not geared to atomic weapons.

President Eisenhower, in his magnificent address before the UN on atomic power for peace, stated: "Atomic bombs today are more than twenty-five times as powerful as the weapons with which the atomic age dawned, while hydrogen weapons are in the ranges of millions of tons of TNT equivalent."

THE HON. STERLING COLE
(R-N. Y.)



This is a force great enough to utterly destroy the heart of even the largest cities and to extend terrible damage far into the suburbs.

Foolhardy to Slight Civil Defense

To be without a sound and active civil defense program in the face of such a threat would be foolhardy. But a civil defense program is like a fire department, it must be fully trained and equipped long before fire breaks out if it is to be of any use. Paper plans and pious statements are worse than useless; they are a public deception and sow the seed for panic in a time of attack.

To take an example, let us suppose there is an attack on one of our large neighboring cities. If aid and relief measures are not well planned, an extremely critical situation is to be expected. Following the emergency evacuation of the attacked city, homeless survivors would be widely scattered over a large region; thousands of half-starved people would be wandering about for a long period, seeking their lost families or friends; there would be frantic competition for the scarce quantities of food, water, and medical supplies available. Many groups of survivors who received no help from people in outlying communities might become extremely hostile and attempt to obtain shelter or supplies by force and violence.

Obviously, if this type of social disorganization occurs following an atomic disaster, a prolonged period of demoralization is to be expected. On the other hand, if the essential needs of the survivors are well provided for and if there is sound community leadership, there is every reason to expect that within a short period of time the vast majority will willingly participate in reconstruction work and make a fairly adequate adjustment to the deprivational situation.

Social Reorganization Problems

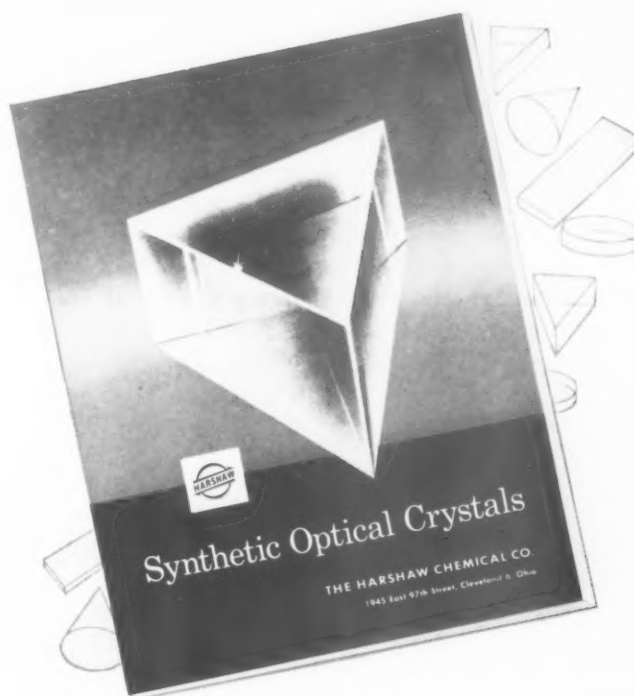
If survivors cannot be permitted to return to the target city for a prolonged period because of the presence of lingering radioactivity or other reasons, there are likely to be serious problems of social reorganization which may have an unfavorable effect upon behavioral morale. Deprived of the opportunity to return to their own community and to engage in its reconstruction, they are likely to become depressed, apathetic, and deeply pessimistic about their future. To meet this contingency, special plans are required to provide for either prompt relocation of the community on a new site or the rapid absorption of survivors into other existing communities. In the event of such a catastrophe, we would all thank God for a well-organized local civil defense program.

In order to provide the needed technical information to the State and Federal Civil and Defense organizations, the AEC and Defense Department have special research programs.

I attended one test last spring at the AEC Nevada Proving Ground which was designed just for this purpose.

The atomic explosion selected for the operation was one in which the Federal Civil Defense Administration had a well-organized test program. The program had three major objectives: (1) exposure of two typical American homes to atomic blast in order to determine what would happen to the homes and to test the effectiveness of simple basement shelters. (2) Exposure of eight outdoor home-type shelters, and (3) exposure of a variety of typical passenger cars to determine the amount of protection afforded to passengers, and the effect on the mechanical operation of the cars.

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SELF PROTECTION FOR INDUSTRY

By LT. COL. CARL E. GRIMSLEY, MPC

82 killed, hundred injured at Blank Chemical Company during the air raid last night which started at 10 p.m. The enemy scored a direct hit on the toxic gas warehouse building of the Blank Chemical Company. Of the 82 dead, ten lost their lives as a result of the bomb hit, 32 due to the escape of stored toxic gasses released by the explosion and 40 due to ensuing panic. Officials have ordered a thorough investigation into the apparent negligence of company officials.

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Due to the speed of travel and the destructibility of modern weapons we are forced into "vigilance" for self-preservation. The normal means we have had become inadequate. This was true on December 7, 1941, at Pearl Harbor, and that was before jet propulsion, long range aircraft and the present day destructive weapons.

"Sabotage" and "espionage" are two words that have a sinister meaning to all of us during war time. However, too often the import is lost in times such as today. We are not engaged in a shooting war, that is true, yet the threat and the acts resultant of these two words is a continuing menace to our country, our way of life and our very lives.

Neither sabotage nor espionage is restricted to times of war but they are continuing operations as a prelude to war. As defined by the Dictionary of United States Army Terms—Sabotage is action by enemy agents or sympathizers with intent to stop or otherwise hinder a nation's war effort or to interfere with or obstruct the defense effort of a nation. Espionage is the use of secret agents to obtain information. In one word we have the combatant to both sabotage and espionage—Vigilance—vigilance in protecting security information and actions taken to reduce or eliminate the defense effort of our country.

The American people have a tendency to fight wars during war time and enjoy peace when there are no wars. Some people say we are complacent, I doubt if this is the proper word and possibly we might substitute "heritage." The heritage right of freedom and the willingness only to fight during war. Perhaps though our heritage was formed during the time when crossing the ocean and crossing the span of our country was a voyage. We are now living in an age where we cross the ocean in a few hours and now the journey is a short trip in time.

We cannot permit ourselves to become complacent in regard to essential security. Protection to personnel, to machinery, raw materials and the finished product is vital to your installation and to the security of your country.

Taxes Don't Buy Security

Too many people have the feeling that our security is bought by taxes through the maintenance of our armed forces to fight the wars and through our various federal, state and city investigative and police forces. There is nothing farther from the truth. Security can only be provided by all of us participating and doing our share.

*Col. Grimsley is CmIC Provost Marshal.

The individual working alone can do but little, however, all individuals united can provide us the maximum.

One of the oldest and most successful military tactics is to cut an enemy's supply lines and destroy his depots. In World War II we went a step farther and attacked the production lines of Germany and Japan at their source—their industrial cities. Now, for the first time in American history, a potential enemy has the means to strike directly at our own two greatest resources—our people and our productive might. Now we are living under the gun.

American industry, then, would be the unquestioned number one target in the event of another war. How has industry gone about preparing itself? So far, by and large, probably no better and no worse than the rest of America. Some companies have excellent civil defense plans already in effect. Others are beginning to move. Still others have done nothing.

Management during peacetime has a constant interest in establishing security measures for the purpose of safeguarding employees, preserving plant property and assuring continuity of plant operations. During a period of national emergency it becomes necessary to supplement peacetime security measures. During periods of national emergencies, factors to be considered are the criticalness of the plant's production and the vulnerability created by the geographic location of the plant.

You, as a part of the great industrial team of this country make up the first line of defense or offense in war, as you do with respect to economic progress during peace. Many of you are presently engaged in the manufacture of items for the Department of Defense. Prior to your receiving this contract you were subjected to many inspections and investigations. At times you perhaps had the feeling of "why." The answer takes many words or phrases such as: your ability to fulfill the contract, does your personnel meet the security standards, are physical security standards adequate enough to protect your plant and the items you are manufacturing for the Army, Navy or Air Force.

Industry as the Main Target

Just how important is Industrial Plant Protection? Let us just analyze the two primary requirements in conducting a war; the first need is personnel and the second is materiel. Without modern implements to arm our personnel we become helpless. Place yourself in the position of planner of war. Which of the two primary requirements is most vulnerable to destruction? I believe you will agree that due to the immobility of plants and lack of dispersion they are more vulnerable to attack and destruction. Therefore an enemy in attack would in all probability direct the main effort to the destruction of our industrial might.

Many measures are taken by you in your factories such as the plant safety program, guard force, medical

aid service, etc. These are necessary services to insure against loss of time and production. Too many today have feelings that any service not directly connected with production is a waste even though figures and statistics prove these feelings so very wrong. It is true that these measures are not complete insurance against accident, security or loss of employee time due to injury or illness.

We quite often read of the many deaths created by panic due to a fire in a building, earthquake, etc. In all cases there are a few individuals cited in these catastrophes for heroism. Most usually, they are those that have had training in discipline needed during emergencies. Just picture your employees' reaction to an air attack if a panic should start. Then visualize the reaction of your employees trained to emergencies.

What would be the efficiency of your skilled workers with low morale due to worry for their own safety and the safety of their families?

Every effort must be made to protect materiel vital to war. This is the reason for the interest of the Department of Defense in seeking to assure necessary security of installations engaged in government contracts.

Prior to 1947 many complexities existed for those plants awarded a combination of contracts by the Army, Navy and Air Force. Each service was guided by its own regulations and requirements which conflicted to some degree to the requirements of another service. The National Security Act of 1947 established a single regulation application to the Department of Army, Navy and Air Force in the field of industrial security. The objective was the establishment of a single regulation (Armed Forces Industrial Security Regulation) governing industrial security policies, practices and procedures of the Department of Defense and to insure maximum uniformity and effectiveness in their application throughout industry by all echelons of the Military Department. Security cognizance of each installation is assigned to a Military Department based upon a fixed criteria.

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COL. GEORGE FREDERICK UNMACHT



Colonel George Frederick Unmacht, retired, who was Chief Chemical Officer of the Central Pacific Theatre of Operations during World War II with headquarters in Honolulu, T. H., and who for some years had made that city his home, died there on January 10, 1954. He is sur-

vived by his wife, Mrs. Irene Unmacht, and a son by a previous marriage, Capt. Geo. P. Unmacht, USN. Col. Unmacht's first wife died some years ago. The funeral was held at the Scottish Rite Cathedral, Honolulu, Colonel Unmacht having been a 33rd Degree Mason. He was very active in the Sojourners. The burial was in the National Memorial Cemetery in Punchbowl Crater. Colonel Unmacht, subsequent to his retirement from active duty February 29, 1948, took a prominent part in civic affairs in Honolulu.

Colonel Unmacht was born in Iowa on September 20, 1887. He served in the Iowa National Guard from September 20, 1905, to June 11, 1906. On December 15, 1916, he was commissioned in the Quartermaster Section, O.R.C. and served in that branch in World War I. He was appointed a captain in the Quartermaster Corps, Regular Army, on September 14, 1920, and on March 2, 1923, he transferred to the Chemical Warfare Service. He was a graduate of the Chemical Warfare School and the Army Industrial College. He had a degree in law from George Washington University.

Colonel Unmacht was on duty in the office of the Chief Chemical Warfare Service in charge of procurement during the emergency period prior to Pearl Harbor and the early part of World War II before his assignment to overseas duty. For his services in World War II he was awarded the Legion of Merit with Oak Leaf Cluster.

"Self-protection Program." We have said that our ability to wage war is dependent upon the weapons and materiel we are able to furnish our fighting men. We have skilled workers, we have machinery, and the "know how." These must be protected, not by the military who are needed in battle but by a "self-protection program."

Establish a "Self-protection Program" within your organization. Your local civil defense authority will give you invaluable guidance.

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We have the Army to fight on the land, the Navy to fight on the sea and the Air Force to fight in the air. We have another strong arm and a very necessary addition to the three fighting services. That is our Federal Civil Defense Administration. This organization is our

COL. GEORGE FREDERICK UNMACHT



Colonel George Frederick Unmacht, retired, who was Chief Chemical Officer of the Central Pacific Theatre of Operations during World War II with headquarters in Honolulu, T. H., and who for some years had made that city his home, died there on January 10, 1954. He is sur-

vived by his wife, Mrs. Irene Unmacht, and a son by a previous marriage, Capt. Geo. P. Unmacht, USN. Col. Unmacht's first wife died some years ago. The funeral was held at the Scottish Rite Cathedral, Honolulu, Colonel Unmacht having been a 33rd Degree Mason. He was very active in the Sojourners. The burial was in the National Memorial Cemetery in Punchbowl Crater. Colonel Unmacht, subsequent to his retirement from active duty February 29, 1948, took a prominent part in civic affairs in Honolulu.

Colonel Unmacht was born in Iowa on September 20, 1887. He served in the Iowa National Guard from September 20, 1905, to June 11, 1906. On December 15, 1916, he was commissioned in the Quartermaster Section, O.R.C. and served in that branch in World War I. He was appointed a captain in the Quartermaster Corps, Regular Army, on September 14, 1920, and on March 2, 1923, he transferred to the Chemical Warfare Service. He was a graduate of the Chemical Warfare School and the Army Industrial College. He had a degree in law from George Washington University.

Colonel Unmacht was on duty in the office of the Chief Chemical Warfare Service in charge of procurement during the emergency period prior to Pearl Harbor and the early part of World War II before his assignment to overseas duty. For his services in World War II he was awarded the Legion of Merit with Oak Leaf Cluster.

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BW- RADIO INTERVIEW WITH GENERAL BULLENE, CHIEF OF ARMY CHEMICAL CORPS

(Report of Nation-wide Broadcast on Mutual Broadcasting Company's program, "The Pentagon Report," on January 24, 1954. Questioning General Bullene was Mr. Wallace Fanning of the Mutual system)

MR. FANNING: General Bullene, we have heard many comments in the past few years about "germ" or "biological" warfare. Just what is biological warfare? What does it include?

GENERAL BULLENE: We, in the Army define biological warfare as the intentional use of living organisms or their toxic products to cause death or illness to man or damage to his crops. Certain chemical compounds which attack plants, while perhaps not true BW agents, are included as a matter of convenience. Essentially, though, biological warfare is public health and preventive medicine in reverse. Except for novel methods of infecting people and plants, it is a form of warfare which nature has waged against man for thousands of years, and against which our modern health practices have produced very effective defense.

MR. FANNING: You've mentioned several classes of agents in your definition. What are some of the more specific agents in the living micro-organism?

GENERAL BULLENE: Living micro-organisms are those which cause diseases such as typhoid fever, typhus fever, or sleeping sickness, and many others. These are generally nonpersistent but under certain circumstances may be transmitted from an infected individual to a healthy one. There are exceptions to this rule, such as in the case of tetanus, where the organism is extremely resistant to environmental changes and hence is a persistent agent.

MR. FANNING: How about toxins, General?

GENERAL BULLENE: Toxins are by-products of living organisms and may be used in a crude mixture with the organism or as a highly refined concentrate of pure toxin. An example of this class is the toxins which form when certain organisms grow in foodstuffs. When consumed the toxin in the food causes violent reactions in the stomach and intestines. Toxins are almost always persistent agents, and most of them are readily destroyed by boiling for ten minutes. The illnesses caused by toxins are not communicable.

MR. FANNING: Your mentioning toxins recalls to my mind the many scare articles that were written a few years ago on botulinus toxin—one of which claimed that an ounce of it would kill a billion people in a half hour.

GENERAL BULLENE: Yes, many things written and broadcast in the biological warfare field have been exaggerated and distorted, and this was perhaps the most glaring example of absolute nonsense. I remember after World War I that a similar statement about mustard gas was used. An article appeared which stated that one ton of mustard gas would kill one million people. The foundation of this statement had a modicum of truth, in that there are about 1 million lethal doses in a ton of that agent. So if you lined up a million people and gave each person his dose with an eye dropper, it is conceivable that you might kill or incapacitate most

of the people. However, experience in World War I showed that it took about one ton of mustard gas to kill one soldier on the battle field. The reason, of course, being that there is a lot of ground on the battlefield to cover with gas in order to get the few men who are occupying the ground.

However, that writer was only a "piker"—he only claimed one million deaths for a ton of agent, while in the article you speak of one billion deaths for one ounce is claimed.

MR. FANNING: From what you've told us, biological warfare is certainly not a new thing. Have there been, to your knowledge, any specific uses of BW?

GENERAL BULLENE: No, BW is as old as time itself. Even with no help from man, germs have entered into every major military campaign. Plague cut down the Crusaders at the gates of Jerusalem. Typhus riddled the ranks of the Moors in Spain, and dysentery thinned out Napoleon's Grand Army as it moved on Moscow. During the Boer War, typhoid fever laid low more men than did bullets. In the early days of World War II, malaria heavily attacked our own forces in the South Pacific. So you can see, Mr. Fanning, more than once, germs, not generals, have decided the outcome of a conflict. But these have been natural attacks and epidemics, and against those our modern defenses are good and are getting better.

MR. FANNING: That's very true, General, and as you say, these were examples of nature at work. Now have there been any deliberate uses?

GENERAL BULLENE: Oh, yes. In ancient times the bodies of cholera and plague victims were dropped over the

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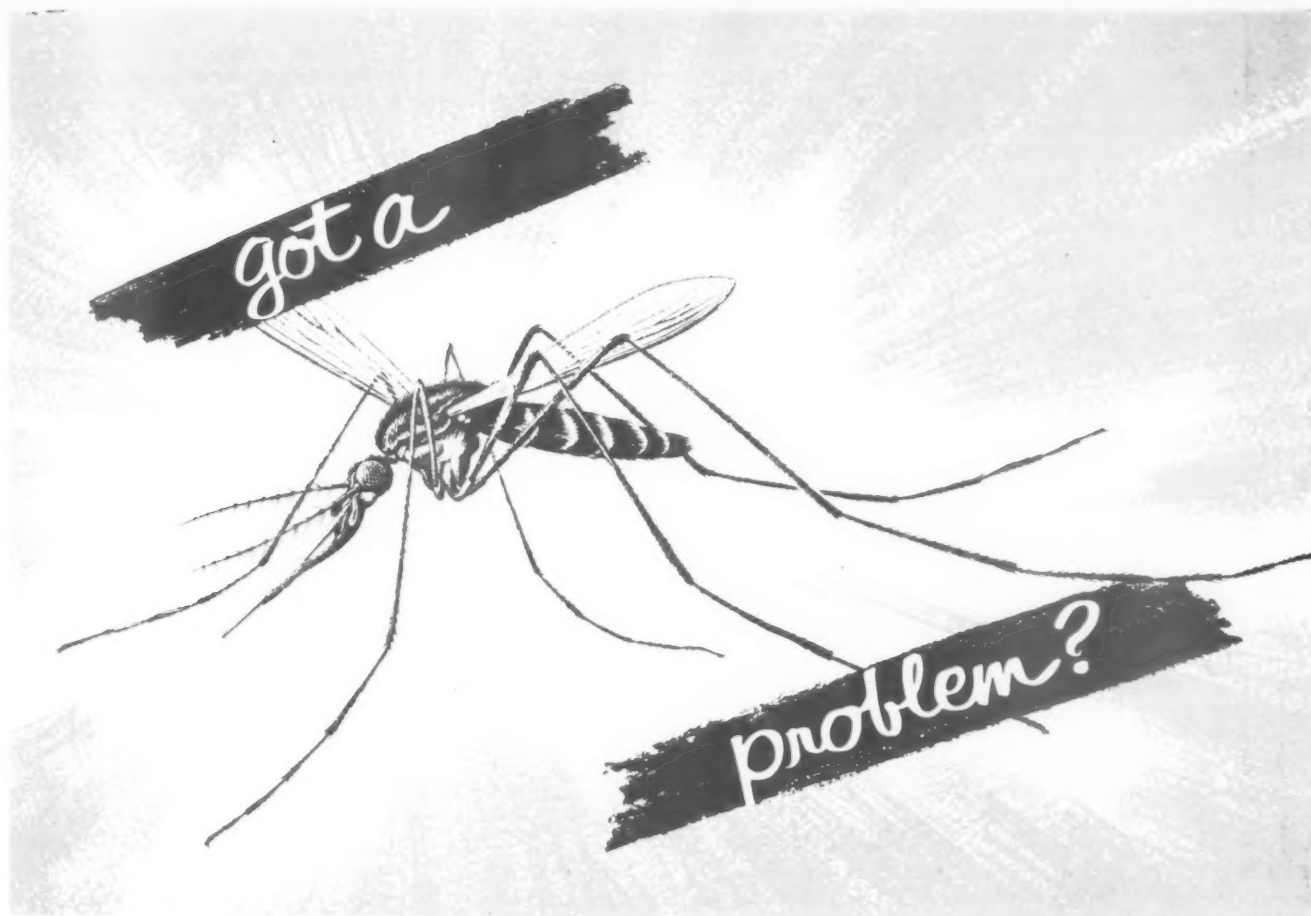
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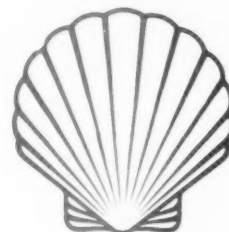
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walls of besieged cities, or left on the ground the enemy was expected to occupy, or used to poison water sources, such as wells and springs. Napoleon deliberately flooded the ground near the besieged city of Mantua, in the hope that malaria would weaken the Italians' will to resist. The Germans, who were the first exponents of biological warfare in the modern sense, during World War I infected the horses of the Rumanian cavalry with glanders. They also infected livestock in the United States that were intended for shipment to the Allies in Europe.

MR. FANNING: We can see then that many countries have expressed an interest in biological warfare. What kind of germs might be used in a biological attack?

GENERAL BULLENE: That depends on what the user hoped to obtain from its use. If killing large numbers of people was desired, plague, typhus, cholera, smallpox, or some similar disease might be used. But if the attacker only wanted sickness rather than death, diseases like rabbit fever or undulant fever could be used. Any agent which causes high mortality, and against which the enemy had little defense, might be used against man.

MR. FANNING: Since man depends upon plants to a large extent for his food and to a considerable extent for his clothing, they would be a logical objective for a biological warfare attack, would they not?

GENERAL BULLENE: Here is a field where man and nature are continually waging a battle, and in so far as biological warfare is concerned, there are many kinds of plant plagues, blights, and pests that could be used to attack food crops. Diseases could damage grain and fruit, while specially prepared chemicals might also be used in raids on growing crops. Any insect pests or plant diseases that are present in one part of the world, but are not present in another section, constitute a threat to the food supplies and economic resources in the latter areas. Some, such as the Japanese beetle, European corn borer, Mediterranean fruit fly, and the boll weevil, either cause extensive losses or are very expensive to control or eradicate even in their natural habitats. The danger is increased by the fact that the most effective method of keeping down losses from known, or native, plant disease is often the development of new strains of plants which are resistant to specific diseases.

MR. FANNING: General, you've told us about the potential targets for a biological warfare agent. Now concerning the agent itself, what must the characteristics be of an effective biological weapon?

GENERAL BULLENE: To be effective, any agent must have a high infectiveness; it must have a high degree of resistance to such destructive forces of nature as sunlight, heat, and drying; it must be adaptable to rapid dissemination; it must have the ability to cause high initial mortality or lasting debilitating effects against the intended victims, whether man or plants; and it should be an agent foreign to that particular part of the world where it is used so that natural immunity has not been built up against it.

MR. FANNING: What would be some of the possible methods of spreading or disseminating biological warfare agents?

GENERAL BULLENE: There could be several different methods or combination of methods that could be employed. For instance, mortar and artillery shell, airplane spray and bombs, guided missiles and rockets, and of course by sabotage methods.

MR. FANNING: What would be the major advantage for a country to use biological warfare?

GENERAL BULLENE: Perhaps the greatest advantage is that unlike the atomic bomb or other blast effect weapons, biological warfare is essentially anti-personnel in nature, since it does not destroy buildings and machines, but is directed against man himself or his food supply—

that is, his crops. Then, too, it is a rather inexpensive way of not only crippling both fighting and productive forces, but it also ties up doctors and hospitals.

MR. FANNING: The mention of biological warfare has a sort of frightening effect on most people. What is your attitude on BW as a possible weapon?

GENERAL BULLENE: An enemy might use BW for three reasons:

(1) They might attempt to incapacitate a limited number of selected individuals in order to delay military or industrial mobilization and production before the outbreak of open warfare.

(2) They might use agents as a part of a general attack in connection with explosives or atomic munitions.

(3) They might use biological warfare in order to lower efficiency, productivity, and morale.

However, it is my personal viewpoint that the danger of bombing this country with these materials is very remote, very unlikely. The real danger to the civilians of this country lies in the danger of sabotage.

MR. FANNING: That requires constant vigilance on the part of local civilian defense organizations, local police forces, and almost every citizen.

GENERAL BULLENE: Yes, it does, Mr. Fanning. The best protection against the threat of biological warfare is an informed populace and alert, vigorous public health and agricultural organizations.

MR. FANNING: Why is the biological warfare weapon so uniquely adaptable to sabotage?

GENERAL BULLENE: Because very small amounts of it could cause extensive damage. Germs can be produced inexpensively; they can be used inconspicuously; and their effects would be delayed. Owing to the difficulty of detection and to the delayed effects, it might be impossible to determine whether sabotage had been committed or an outbreak of the disease had occurred naturally.

MR. FANNING: The thought of biological warfare is repugnant to many of our citizens. General, why is your Corps working in this field?

GENERAL BULLENE: We know that other countries have worked in this field and we must inform ourselves on the subject in order to assess the threat and to be in a position to protect ourselves in case we are attacked.

MR. FANNING: Now for the sixty-four dollar question. Did we use biological warfare against the Chinese in Korea?

GENERAL BULLENE: Of course not, that is the most ridiculous charge anyone could imagine. We were also charged with dropping poisonous snakes and spiders on their army. Mr. Fanning, we do not raise snakes in the Chemical Corps. Disease has followed armies since time immemorial. The poorer the sanitary regulations and preventive medical care, the more prevalent is disease. I have no doubt that the Chinese Army had sick soldiers to exhibit and photograph, and it is my personal opinion that one reason they made such a preposterous charge was to draw attention away from the poor medical care they gave their own soldiers by trying to blame us for their own negligence.

MR. FANNING: In case of a biological warfare attack, how long would germs linger, and how fast would a disease spread?

GENERAL BULLENE: When scattered about in a raid, most germs and toxins would be likely to settle in places where they could not live or stay dangerous for very long. As a rule, heat and cold, wetting and drying, and particularly exposure to sunlight will destroy germs within a short time. Although disease can spread quickly, most outbreaks move quite slowly. The plague that swept London in the 17th Century began with a few

cases in the fall of 1664, and took six months to cross from one side of the city to another. The peak of the epidemic did not come until a year later. While almost 70,000 people died of the plague, it was not a lightning-quick disaster from which there was no escape. With the public health organizations that exist today, the London outbreak could have been stamped out with little or no loss of life.

SOME DILEMMAS OF DEFENSE

(Continued from Page 11)

to eliminate the men who develop physical handicaps or accept civilian employment in which they would be needed in the event of full mobilization. Those who remain in our reserve units must be men who are truly ready—physically, mentally, economically—to don their uniforms and go into active service in defense of their homes and country on extremely short notice.

This may also bring about a change in the traditional role of the National Guard as a federal reserve unit. As you all know, the Guard was called into active service in World War I and World War II, and its regiments and battalions and divisions sent to foreign lands to fight alongside their brothers-in-arms of the regular services. There is no assurance that any future war would be fought under those conditions, considering that our major industrial centers might be put under aerial attack at the outbreak of any aggression against the United States.

Indeed, the National Guard has already accepted a new role. Under a program announced recently, the Guard will assume a major share of responsibility for guarding major industrial and population centers against just such attacks as we have been considering.

Twenty-six states and the District of Columbia will contribute National Guard units to this defense program, a splendid example of citizen soldiers serving the interests of national defense right in their home localities.

These, then, are some of the dilemmas of defense. I do not think that the situation is disheartening because the problems are many and difficult. Indeed, all Americans should look at these matters as we view them in the Department of Defense—as challenges to our intelligence and our ingenuity and our faith.

GENERAL BULLENE TO RETIRE

(Continued from Page 8)

ter, Md., General Bullene recommended that the Chemical Corps move its school and training center to Fort McClellan, Ala. Afterward as Deputy Chief, he supervised the move and, still later as Chief Chemical Officer he approved the designs for the new Chemical Corps School and other installations of the Corps at Ft. McClellan which are expected to be ready for occupancy next Fall.

In 1951, the Chemical Corps pioneered a management system known as the Army Industrial Fund, under which the fiscal operations of an arsenal are conducted similarly to those of a commercially operated facility. Largely based on Chemical Corps' experience this plan was later adopted for widespread use throughout the Army.

General Bullene reorganized the Chemical Corps shortly after becoming Chief Chemical Officer in 1951 and established its three functional field commands, Research and Development, Training, and Materiel. This move separated policy and planning activities from operations, leaving the former the direct responsibility of the Chief.

As the Journal goes to press no announcement of the successor of General Bullene has been made.

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"All of the activities of government agencies cannot make up for lack of self-help in Civil Defense."—Dr. John J. Grebe, scientist of The Dow Chemical Company and consultant on various Government defense projects.



THE MEDICAL MAN AND CIVIL DEFENSE

Survival Shelters, Emergency Supplies and First Aid Kits*

By JOHN J. GREBE, D.Sc.

Midland, Michigan

Dr. Grebe, who has been a member of the Dow organization since 1924, is currently a consultant of the Army Chemical Corps and in the period 1948-49 served for a year as chief technical adviser to the Chief of the Corps. He was a consultant on research organization for the United States Air Force, and during World War II he was consultant to the Office of the Rubber Director. Dr. Grebe is currently director of Nuclear Research and Development for Dow, heads up the Company's work in the Dow-Detroit-Edison project, and is vice-president and director of Dowell, Inc., a Dow subsidiary. Dr. Grebe holds more than fifty patents in electrochemistry, power generation, synthesis of organic compounds and air conditioning. A graduate and holder of the honorary degree of Sc.D. from Case Institute of Technology of Cleveland, Dr. Grebe in 1943 was the youngest man ever to receive the Chemical Industry Medal for his outstanding contributions in chemical research. In 1946 he received the Hyatt Award for plastics.

In making this article available to the AFCA Journal for reprinting, Dr. Grebe stresses his conviction of the necessity for a high degree of self-help in the development of a strong Civil Defense.—Ed.

The following subject matter is intended to augment the excellently prepared articles, bulletins, moving picture films, and books that are available on the general subject. Some of these are listed in the appendix. In addition to the contents of these publications, the medical profession should also know the broader picture of the hazards to be expected for guidance of practical and economically sound civil defense efforts. Most people will overlook the significance of a statement made in the Armed Services education film, "Medical Services in Atomic Disaster," in which it says: "One plane—One bomb—One city." This should be taken literally. The area of a city might be 150 square miles, and still one bomb may be sufficient to destroy it. This is due to the fact that the bomb, while taking with it only several square miles, produces an updraft immediately following the blast. The rising cloud of hot gases serves as an

*Reprinted, by courtesy of the publishers, from The Journal of the Michigan State Medical Society, Vol. 50, pages 271-274, 298, March 1951, with new overall-title and brief additions to the text by the author.

Fig. 1

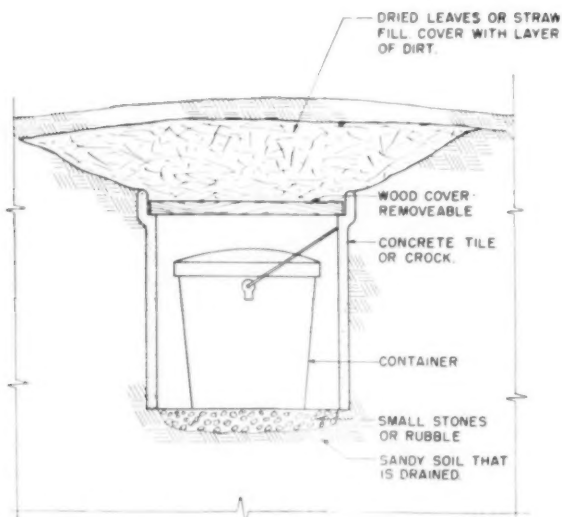
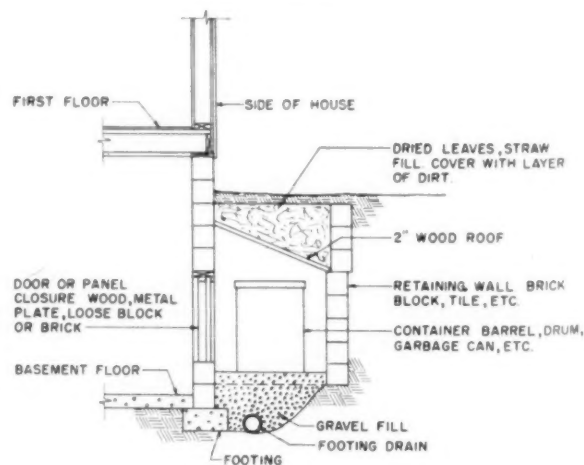


Fig. 2



enormous chimney that makes the entire city into a fireplace. H-bombs add even more to the hazard.

Even with incendiary bombs used alone, as they were in the Hamburg raid, similar chimney effects were obtained which, when once started, produced winds across the city toward the base of the chimney of gale intensity. Any fires accidentally started or set by very few incendiaries reaching ever widening circles will burn down all of the city that can be ignited from intense, circumferential fires in a converging wind. Even fireproof buildings will add kindling. Windows, if not broken by the blast, will be smashed by the flying debris which will ignite the contents. Even large park and water areas may be jumped by flying embers.

Nor should we think in terms of radiation, blast, fire and wind damage alone. If the enemy chooses to preserve an area physically for future use, but to make it unlivable for some time to come, that too is possible with the A-bomb.

The direct effects from radiation, shock and a mad scramble out of the area will leave many casualties behind, even if the bomb is used in a way to avoid excessive destruction.

In other words, the bomb may be used to insure the entrance through millions of broken windows of bitter cold winds, as well as chemical, biological and radiological agents that will leave their human toll, although not destroying any more than what the enemy considers most desirable for immediate crippling of transportation and production, and for getting rid of populations that do not go along with their philosophy.

Finally, we should expect the most potent and insidious type of attack—psychological warfare—in combination with any of these approaches. These will range all the way from the use of various materials that dement and torment people, to carefully incited, cool, calculated, precisely executed sabotage intended to demoralize. The major enemy effort is to be expected in the line of producing a vacillating, uncertain, compromising, or overzealous administration of vital defense offices that leaves everything in a turmoil. A different slant can be expected at each city, new tricks each time. The most competent men can be expected to be the major targets of whispering campaigns. Radio can be a most deadly weapon.

The tremendous success of psychological warfare techniques, currently used against us on both sides of

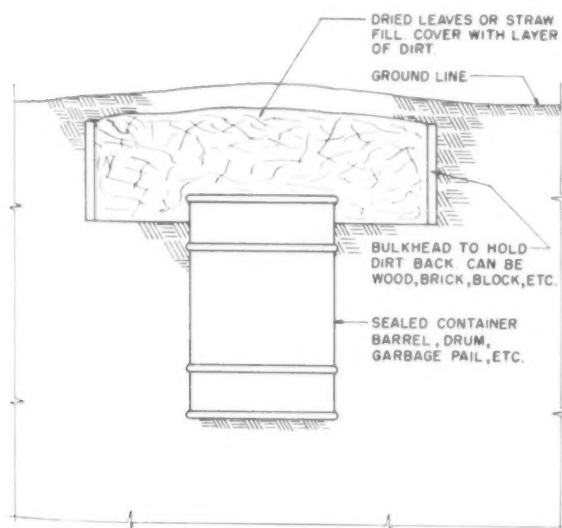
the iron curtain, as evidenced from ordinary news items that seep through, leaves one with more of a shudder about what can happen here than all the information on what an atom bomb has done in the past, or is likely to do in combination with other known techniques in the future. Certainly, the Reds will improve immeasurably on the highly successful Nazi efforts.

These general considerations emphasize the necessity for the medical profession as a whole to be the major analyzing, rationalizing and stabilizing influence in a community. The writer can say that, being entirely outside of that profession. This is a responsibility far beyond any you may have visualized in the past. It is definitely beyond what you will ever get credit for or be appreciated for, by the population as a whole. It is the price of leadership.

Now, then, what will we do about the problem as defined above? The first and most important aspect is that each citizen must recognize that the major preparation cannot, and will not, be done for him by any federal, state, or local agency. The typical American capacity for independent judgment and individual responsibility with freedom of action will prove our secret weapon for survival when it comes to a pinch. Americans do cooperate and pull together but they also use their individual heads. The danger of over-organization and over-regimentation cannot be stressed enough. Co-ordinated effort on a voluntary basis will bring effective protection. We must recognize that even if the worst does happen here, and half our homes are denied or useless, we will still be better off than the early settlers who built our country. Even if all power, communications, and public transportation fail and all the cities are uninhabitable, we will still be ever so much better off

(Continued on Page 30)

Fig. 3



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Dugway—THE LAND OF ROOM ENOUGH

By MRS. JOANN MONTAGUE

I want a ship that's westward bound to plough the rolling sea,
To the blessed Land of Room Enough beyond the ocean bars
Where the air is full of sunlight and the flag is full of stars.

Van Dyke

In July 1951 my husband received orders, long delayed by the Korean affair, for the Zone of the Interior. The station—Dugway Proving Ground. We had heard of this Post when in 1949 a friend of ours operated a Mobile Weather Unit there, but when inquiries were made about shipping household goods, the Air Force Directory listed Dugway as an "uninhabited area." Still and all, it was the ZI, and only a short day's drive from our Colorado home.

Separating and packing household goods and hold baggage was a task quickly completed. We had had plenty of practice at moving, having called twelve places "home" in our nine years of marriage.

We had had a delightful twenty-two months on the tropical island of Guam. Now the only question in our minds about Dugway was whether our family could be together or not. We were soon to find out, however.

Hears No Housing Available

After a thirty-day rotation leave, my husband reported in to discover there was no housing available. We decided that I should live in Salt Lake City, a distance of eighty-six miles, over a seven thousand foot mountain pass, or one hundred miles, around two mountain ranges and the Great Salt Lake. We were very fortunate, however, for after only four months of commuting, the Commanding Officer, Colonel Yanka, told my husband it was his opinion that the Air Force should be represented on the Post, and, since he was the only one with a family near, quarters were his. What a day of rejoicing that was after living in Salt Lake, with my husband driving in after work Wednesday evenings, arriving long after dark and leaving again before dawn, and weekends, starting Saturday afternoon and lasting till 4:30 a.m. Mondays. Even the most discouraging of reports concerning an upstairs

War-time troop barracks converted to apartments in which the author and her family lived before moving to new area.



The JOURNAL asked Dugway for an article on post life at this unique Chemical Corps Station in the Utah desert from the Service wives' point of view. Mrs. JoAnn Montague, wife of an Air Force officer on duty there, very kindly responded to the request. Here Mrs. Montague tells of the vicissitudes of the last of the pioneering days at Dugway and of the new housing and other construction work which have helped to promote community spirit and make this station a pleasant place for duty and living.—Ed.

apartment in a drafty, converted barracks building in no way dampened my spirits. I had never seen Dugway, and, after the long drive out, arriving amid a January desert blizzard to find four bleak rooms piled high with footlockers, it still looked wonderful.

Our apartment was really very adequate; we had two bedrooms which were spacious. We bought paint and redecorated the front room and kitchen, and within days it was home and we all loved it, even the GI cookstove and the GI furniture, well-used, and why not? Duty hours were over at 4:30 p.m., and at 4:45 I could serve dinner.

Finds Beauty in the Desert

Our neighbors in the building included the motor pool officer and his wife, both New Yorkers on their first trip West—typical of so many Dugwayites, for I am sure seventy-five percent of the personnel here were from the East at this time—New York, Rhode Island, or New Jersey. It was unfortunate that these people should receive their first impression of the West from Dugway. I had lived on the desert all my life, although I had seen it made green by irrigation. Still, when people finally resigned themselves to the fact that the closest tree was twenty miles away (except for scrub junipers), they could see that the desert has a beauty all its own. The mornings and evenings are always delightful in any season. The mountains are a gigantic and endless backdrop for the sprawling desert. Granite Peak in all its stark ruggedness stands as a symbol of its own strength against the surrounding decadent land which was once the bed of an even Greater Salt Lake. Approaching Dugway from the Pass, one can see four separate and distinct mountain ranges stretching even into Nevada. This installation received its name from the Dugway Mountains, so-called because of the "dug ways" the pioneers made

GH

for the wheels of their wagons to keep them from toppling off the sides of the sheer slopes.

Our eight-year-old daughter, Judee, already was fascinated by having the school, the library, and the PX just across the street. The school was in two frame buildings, heated by drafty coal stoves in one corner. Grades 1, 2, 5, and 6 were in one building, while Grades 3 and 4 shared the Post Office. The Junior High and High School children were transported by Army bus to Tooele, fifty miles away, departing at 7:00 a.m. and arriving home at 5:00 p.m., depending on the condition of the Pass in the winter. An excess of snow made it necessary for the bus to take a circuitous route, some twenty-five miles longer.

Gives Hand at Teaching School

The playground was the street in front of the school, blocked off each day by the MP's from 8:00 a.m. until 3:45 p.m. There were about forty children in the school, ten from Dog Area (our area) and the rest brought in by bus from the trailer court in Fox Area, five miles distant, with the exception of two or three Indian children who came from the off-post reservation in Skull Valley.

I am a teacher, the talents of which profession are nearly always in demand, and I substituted occasionally. Then in April of 1952, when a freakish snowstorm caused an auto accident in which one of the teachers was badly hurt, I taught a week until the place could be filled. I managed to stay out of the system then until January of 1953, when the housing was completed and the enrollment increased by fifty percent during the Xmas vacation with no teachers available. That year I completed the school term.

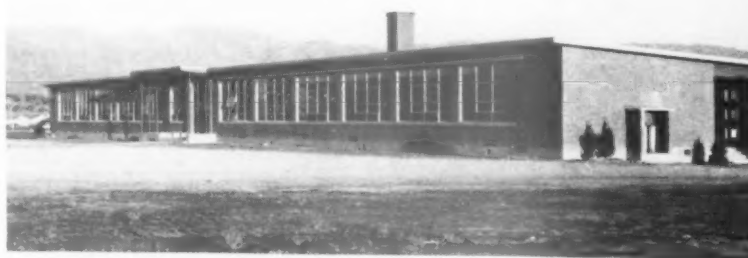
The Officers' Club was of necessity a very small organization. When an officer lived off the Post, he could submit a letter of resignation to the Post Commander stating his circumstances and his reasons for not being able to avail himself of the use of the Club. This situation was, of course, very unusual, but understandable at this Post. We had two tables of bridge on Monday nights, bingo and bridge alternately on Wednesday nights, and a Saturday night party once or twice a month, usually very poorly attended because the exodus which began at noon Saturdays included nearly ninety-five percent of the personnel on the Post, and the place was a ghost settlement until Monday morning. The people who did come always enjoyed themselves, small as the group might be. And when the reception for the in-coming Commanding Officer, Colonel Hale, was held, everyone attended, and there was truly standing room only.

Church Services Arranged

In April of 1952 we were at last able to have church services on the Post. Before this, a chaplain from a neighboring installation would hold services once a month or less often. Now we had a pastor of our own, chaplain Eidbo (civilian) sent out by the Lutheran Missionary Society. He was a wonderful inspiration, especially for a post starved for religious services. A cogent speaker and an excellent organizer, he soon had a Sunday School going for the sixteen Protestant children (The majority of the civilian families were Latter Day Saints, who conducted their own lay services) and a youth choir begun. He secured from the Engineers a pulpit, altar rail, altar, and candle holders, while Mrs. Hale and I made and embroidered the fair linens and altar cloths so that on Palm Sunday, with the new appointments and some greenery from the desert, the movie theatre was truly converted into a chapel, as thoroughly appreciated as the finest cathedral in all the land. We were all grateful to Reverend Eidbo for his fine work. And, although there was



New grade school building at Dugway Proving Ground, test station of the Chemical Corps in the Utah Desert.



Facilities at Dugway now even include its own high school, an advantage frequently not found at military stations.



Through Wherry housing project, new family quarters of which that shown above is typical have been provided.



Trees planted about the area of the Non-Commissioned Officers' Club shown above mark the change which new construction is bringing to living at this desert station.

an excellent attendance among the families and a good representation from the young men, the largest representation was among the young women employed on the Post, for the chaplain was a very charming and handsome bachelor. However, this situation was short lived as he was replaced in August by an Army Chaplain from Korea, happy to be reunited with his wife again.

About this same time, it was decided to organize a women's club, so-called. At the time, probably over half of the interested girls were wives of civilians, the minority officers' wives. Also, the majority lived at Tooele Ordnance Depot, Tooele, or even at Salt Lake; therefore, trying to start an active women's club was truly a problem. Everyone was wonderful though. We would alternate luncheons in Tooele and Dugway to encourage attendance. There were no baby sitters to be had at Dugway, so the wives took turns doing the job. We had an average attendance at our luncheons of twenty as compared to sixty-five to seventy-five a year later. For our dessert bridges, we never had more than two tables, while a few months later we could anticipate seven or eight. There were many growing pains in our organization, but friendliness and cooperation proved a panacea for them all. When guests come from Salt Lake City, they seem always pleasantly amazed to find such a large group of women, and, of course, our new club now makes a perfectly wonderful setting for any program, be it fashion show or lecture.

When school was out, nearly all the school-age children left to spend the summer with grandparents. This season was nearly unbearable. The thermometer in our southwest apartment reached 100 and more nearly every afternoon. Some people had air conditioners, but the Engineers were very reluctant about installing the units on the second floor, so we made it through the summer. When we planned our leave, we had offered our apartment to a friend who had left his family in another state, but, when he brought his wife out in August, she stayed only two days in the heat! We used to attend the air-cooled movie every night to escape the heat, or often we'd drive into Salt Lake City for week-ends.

Movement to New Area

In June 1952, the new buildings in Easy Area (built ten miles closer to the main gate) were completed to such an extent that most offices and dormitories were transferred to the new location, leaving only a few offices, the PX, commissary, hospital, theatre, and weather station still operating in Dog Area. All this summer, too, the ten miles of road was torn up between the two areas, which was an extremely difficult situation through the sand dunes area, causing more than one car to sink to its axles in the loose and shifting sand. On windy days, work would have to be completely suspended. At this time, Easy Area was a veritable dustbowl. I have been driving through the area when it was necessary to stop the car due to the density of a dust storm. During this time, too, it was a common practice to have tests in Dog Area, and it was often necessary to evacuate at a moment's notice all dependents, or those who did not possess a gas mask. Usually, we were notified several hours ahead that there might be an alert, so that at first we tried to coordinate our meals and the babies' naps to this schedule. Soon we discovered how unpredictable these alerts were, so we just went ahead with our routine, then gathered up everything, helter-skelter, when the siren sounded—children, pets, and all. At times such as these, the Officers' Club in Easy Area turned into an ersatz nursery much, sometimes, to the distress of the management.

We went on leave in August, and, when we returned, it was to find that five of the eight apartments in our

building had been reassigned. This was the beginning of many new friendships for there were now six families whose wives did not work, and we spent many, many hours chatting, comparing knitting, & tatting patterns, recipes, drinking coffee, and enjoying the good company. The nine children, ages three to sixteen, had wonderful times together, and the walls and stairs fairly shook when school was over.

School started this fall, 1952, in the new school building in Easy Area. The less than fifty students rattled around in only three of the rooms, while the next term, a year later, was to find every room filled, some to overflowing. But what a wonderful time these few children had this year. The largest event was a magnificent production of "Alice in Wonderland," with every student in school a thespian for the night. The costumes were fabulous, each parent being responsible for his own child. And, from Alice and the White Rabbit to the King and Queen of Hearts and the knaves, it was a production worthy of a miniature Oscar.

Friendship and Thanksgiving

Thanksgiving Dinner at our Club was attended by nearly every member on the Post. This holiday seemed a symbol of the thankfulness we all felt for our families being together, or the warmth of friendship which is experienced only in a group bound by mutual ties, and more especially the friendship which we families at Dugway shared. It was a wonderful thing which, quoting from a sampler which hung in my childhood home, is "a generous warmth which fills the breast and is better felt than e'er expressed." So it was with those of us here during that holiday season. We knew that soon housing would be opened, and we were all grateful beyond words, yet perhaps a little wistful just this once that this group, knitted together by the closeness of our quarters and interest would soon be enlarged to include all of the newcomers.

By December 20, the rumors of the past two years finally became realities, and notices of housing assignments began to be received. Two families in our building were on that list, and as soon as Xmas Day was over, the trucks and vans came backing up to the doors, and the excitement of moving day filled the air continuously for the next forty-five days. By that time everyone in our apartment barracks had moved into the new housing in Easy Area. My husband and many others now had to drive ten miles to work; for us it was inconvenient, but for those who had been commuting anywhere from fifty to a hundred miles a day, it was wonderful! Television had reached Dugway by this time, too, so we were truly "living."

Trees and Grass Begin to Grow

And now Dugway, from the viewpoint of dependents, is one of the finest installations in the country. There are over 400 units in our housing project, and grass and trees are beginning to grow. Our children have wonderful advantages: an excellent school system from Nursery and Kindergarten to High School housed in two beautiful and modern buildings, an adequate library, dancing and music lessons, and activities planned for every holiday. The Teen-Agers Club has been recently organized and is proving to be an enterprise well worth all the time spent on it. Special holiday parties are always on the agenda, with extra projects such as dancing classes and hobby instruction.

There is an active Scout program participated in by nearly every child on the Post with excellent leadership. The Sunday School boasts over ninety percent regular attendance with a children's choir singing once a month

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at the chapel. It was wonderful to watch our Sunday School grow here. I worked in it from the time we had a full membership of sixteen and a staff of four until Rally Day this year when we could count 183 members and 27 teachers.

Our chapel has a governing body composed of members who participate in and handle such functions as the Sunday School, ushering, choir, welfare, with guidance by, but not dependence on, the chaplain. Our missionary program is a special one, the money being used to bring to the United States and to educate a young Korean Christian who worked with our chaplain during his tour in that country. It is a most gratifying project. Active members pledged to our Dugway Protestant Chapel family number around 150.

The Thrift Shop is an active organization which contributes regularly to all the youth activities on the Post. The Red Cross Blood Bank comes out every eight weeks, and the wives on the Post contribute seventeen workers for each day it is here. Our Women's Club has had excellent and worthwhile programs including a hobby show by the members themselves, lectures on the art of converting our native desert juniper and bitter bush into beautiful lamps and other objects d'art, and dramatic art from Salt Lake City.

Our most popular form of informal entertainment is morning coffee or dessert card parties to introduce newcomers.

The NCO Club has an air of informality about it, and every function finds it well-attended. The NCO Wives have organized a Stitch and Chatter Club, which has contributed both financially and personally to many of the activities on the Post. Bake sales are a profitable venture on this Post due to the lack of a bakery, and many organizations have taken advantage of this money-making proposition.

Community Activities

We have never lived on a base or post where we have felt the responsibility of community activity as we do here. From church and club work to the PTA, we try to help promote these organizations and find ourselves feeling a real pride in their success. Our PTA boasts a paid membership of 251, with an enrollment in the entire school system of 306.

For recreation there are many choices of activities. Intra-mural sports are always being conducted. Some of these are basketball, football, baseball, softball, and bowling. The Service Club has many and varied activities for both civilian and military personnel—coffee clubs, card games, bingo, dancing, classes for amateur geologists, shutter bugs, ceramics and other special hobby programs. For more active participants, arrangements are made during the winter for ski enthusiasts to pursue their sport at near-by mountain resorts; during the summer, for swimming classes at the nearest pool in Tooele. And, of course, hunters and fishermen are always able to find plenty of game in the near-by mountains. Rock hounds find a paradise for semi-precious gem hunting in the Cedar Range, Topaz Mountains; geode collections are the subject of many discussions. Picnics are a popular summer pastime, and any of the three canyons, Bryce, Zion, and Grand, are within easy driving distance. Most of the people here take advantage of any special events in Salt Lake City, for, after a few times, the eighty mile drive does not seem as far as one would think.

The tremendous amount of spirit in this new community has made it a wonderful place to live. A tour of duty at Dugway should be a pleasant and busy one for any officer's wife.

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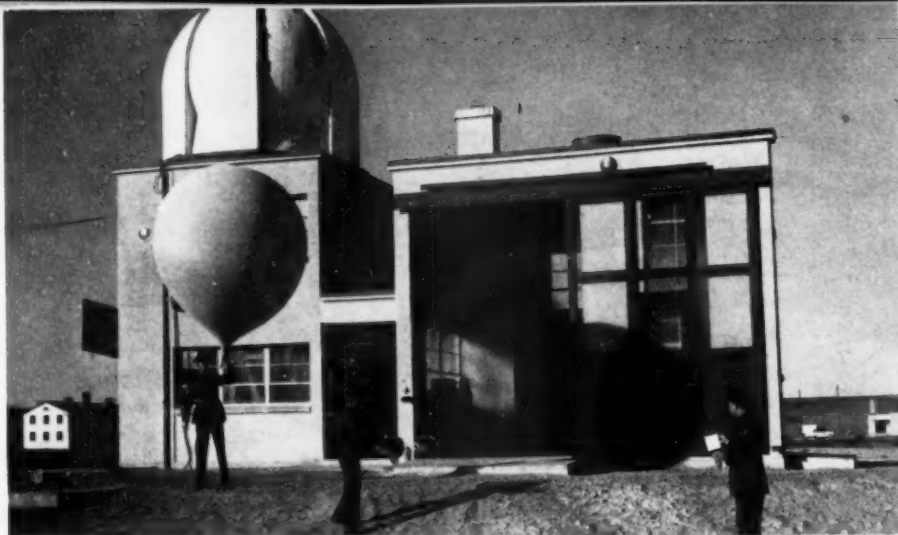
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A Rawinsonde weather balloon is prepared for release in the atmosphere with its radio instrument for sending data on the upper air by personnel of Detachment 19, 4th Weather Group at Dugway Proving Ground. Left to right, Technical Sergeant Wayne D. Bacon, Lt. Col. Archie M. McFarland, commanding officer, and Airman First Class Harry E. Standley.



Jet Pilot, 2nd Lt. Raymond Schnabel, receives a weather briefing from Lt. Col. Archie M. McFarland, commanding officer of Detachment 19, 4th Weather Group, at Dugway Proving Ground, Utah.

GETTING THE WEATHER AT DUGWAY

U.S. Air Force Forecasting Station at Research Establishment of the Army Chemical Corps in the Utah Desert Is One of the Links in Global Chain Maintained by the Government

This article with accompanying photographs was furnished by The Public Information Office, Dugway Proving Ground, Dugway, Utah.

DUGWAY PROVING GROUND, UTAH, one of the links in the global chain of weather stations maintained by the United States for use by civilian and military agencies is the forecasting station operated by Detachment 19 of the 4th Weather Group, U.S. Air Force, at the Chemical Corps main testing site in Dugway Proving Ground, Utah.

The constant mumble of the teletype machines operating on civilian and military circuits never stops at the Dugway station as Lt. Col. Archie McFarland, U.S. Air Force, commanding officer, and his staff feed the machines 24 hours a day, every day in the week, with continuous reports on Utah weather while receiving a never-ending stream of weather information for forecasting purposes from teletype and facsimile networks in the United States, Canada and adjacent ocean areas.

A graphic illustration of the results obtained from the observations of Dugway and similar stations are the detailed weather maps of the entire United States produced by the joint U.S. Weather Bureau of the Air Force and Navy Analysis Center in Washington and received by the detachment in Dugway on facsimile machines similar to the wirephoto pictures transmitted by the big news agencies. The instantaneous reproduction of weather maps made up in Washington enables Dugway to give information of the latest weather developments to military sources in the Salt Lake area. Of particular importance in recent years has been the advance warning of severe storms the Air Weather Service stations have been able to give military agencies and civilian communities.

The principal service rendered by the detachment to the Proving Ground is that of furnishing micro-weather* forecasts for test purposes. In order to accomplish their mission they must provide observation of the upper air and continuous surface observations at the site of field tests. The upper air observations are accomplished with the aid of a mechanical brain in a radio instrument attached by parachute to a huge balloon filled with helium. While the balloon soars to

approximately 100,000 feet into the air the instrument constantly is sending signals to a ground receiving set, which is translated by skilled observers into data on weather conditions in the upper air.

Due to the large area of Dugway Proving Ground, where test operations may extend over a space nearly as large as the state of Rhode Island, it is necessary for the detachment to maintain mobile meteorological units, which provide micro-meteorological* observations and forecasts in the widely dispersed field test sites for field operations.

In order to provide qualified personnel to support field tests and base operation, the station conducts a constant training program. The detachment also administers a reserve training program as may be required for Air Weather Service Reservists in the Dugway area.

Detachment 19 is one of the sixteen weather detachments which comprise the 4th Weather Group. These detachments are located in various states of the United States and on islands of the Caribbean.

The headquarters of the 4th Weather Group is located in Baltimore, Maryland. The group is directly responsible to the Air Weather Service, Washington, D.C., for the operations. The AWS provides specialized meteorological service required to support the Departments of the Air Force and the Army on a world-wide basis.

The Air Weather Service relies on strategically located ground weather stations such as Dugway.

BELOW, left, Staff Sergeant Donald Thrasher takes a reading on the signals received by this tracking device from a radio weather analysis instrument attached to a helium balloon that is soaring in the upper air. The device is part of the equipment of the forecasting station operated by Detachment 19, 4th Weather Group, at Dugway Proving Ground.

BELOW, RIGHT: Captain Hal R. Montague, Detachment 19, 4th Weather Group, briefs Mr. William Fox, test observer, on weather conditions for forthcoming Dugway Proving Ground test.



*The term micro-meteorology is used in reference to weather data for the atmosphere up to 6 feet from the ground surface.—Ed.

REPRESENTATIVE COLE

(Continued from Page 13)

In evaluating the results of any test, two important things must be kept in mind. The tests were made with an atomic weapon of known size and power, and test items were placed at known distances from ground zero. But in translating the test results into what would happen in case of atomic attack on our cities, we do not know the size and power of the enemy weapons which might be used against us. We do not know where those bombs would fall in our cities—i. e., what their ground zeros would be.

What Civil Defense and the public need are general conclusions which will apply in the majority of cases under the principle of the "calculated risk" which is basic to all realistic civil defense planning.

Thus, when Civil Defense recommends a home shelter design, they are saying in effect: "Since no one knows where ground zero would be, the chances are that you would not be within the total destruction area of an atomic burst over your city. Therefore, this home shelter should give you good protection from blast, heat, and radiation. It probably would save the lives of yourself and your family in areas where persons with less protection might be badly hurt or killed."

FCDA learned that the shelters which were tested can withstand blast, heat, and radiation. They learned that with such shelters, the chances for survival under atomic attack are greatly increased.

In the face of the present-day, high-speed airplane, coupled with atomic and hydrogen bombs, America must for the first time learn to live under the constant threat of large-scale destruction. A sound military defense coupled with an effective civil defense program provides the best defense against attack. We all yearn for quick, complete, and automatic protection, but today there is no such protection and there is no reason to believe that any such protection can be provided in your lifetime or mine. As long as the threat of militant atheistic communism exists, our best defenses will be a sound military program and a sound civil defense program.

The success or failure of the civil defense program will rest upon the effectiveness of the local civil defense groups, and the cooperation of local homeowners in setting aside family supplies of food, medicine, and water. It is organizations such as yours, however, which will carry out the actual rescue operation, and supply medicine and food in quantity. It is the local civil defense organization which will have to carry the burden if the Triple City area is struck, or if we have to come to the aid of one of the nearby metropolitan communities. When the catastrophe has struck, it will be too late to learn the fundamentals of first aid to obtain medical supplies, to set aside a store of food and water. If we do a good job on civil defense, we will not only be better prepared in the event of an emergency, but if the country as a whole does a good job, the chances of our facing such an emergency are reduced.

A potential aggressor will be keenly aware of the efficiency of our civil defense organization, and it is an important factor in the determination of his chances of success. As was true in Hiroshima, the panic following the bomb explosion can do more damage than the explosion itself, and civil defense is as much protection against panic as it is aid to the injured. . . . In closing, I should like to point out the positive nature of good Civil Defense. A good Civil Defense program, coupled with a sound military program, may well supply the time needed for men of good will to work out a solution to the atomic dilemma—a solution which will permit the world to enter upon the era of peace.

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—U.S. Army Photo

Left to right, seated: J. J. Dougherty, R&E Command, Army Chemical Center, Md.; Mark Philips, Training Command, Ft. McClellan, Ala.; Ralph A. Dalton, Training Command, Ft. McClellan; Thompson C. MacKay, Dugway Proving Ground, Tooele, Utah; Leon Burnham, Director of Work Simplification, Office of the Comptroller of the Army; Boyd E. Garrett, Rocky Mountain Arsenal, Denver, Col.; Bertrand Beck, Deseret Chemical Depot, Tooele, Utah; Gerald W. Beveridge, Camp Detrick, Frederick, Md.; Captain Malvin F. Glass, New York Chemical Procurement District, N.Y.; Roger Thorn, Army Chemical Center, Md. Left to right, standing: Major E. C. Bingham Jr., Office, Chief Chemical Officer; Keith E. Nelson, Office, Chief Chemical Officer; Preston A. Wright, CmC Work Simplification Coordinator; R. F. Read, Office, Chief Chemical Officer; Frank Cullen, Chemical Corps Materiel Command, Baltimore, Md.; Lt. Colonel H. H. Cottingham, Pine Bluff Arsenal, Arsenal, Ark.; Frank C. Donleavy, Chemical Corps Materiel Command, Baltimore, Md.; Raymond D. Ertel, Office, Chief Chemical Officer; Brig. General Lawrence R. Dewey, Chief, Management Division, Office of the Comptroller of the Army; Colonel James H. Batte, Comptroller of the Chemical Corps; Walter F. Essig, Deputy Comptroller of the Chemical Corps; Lt. Colonel R. K. Nelson, Asst. Comptroller for Management, OCCm10.

WORK SIMPLIFICATION CLINIC

By PRESTON A. WRIGHT

*Work Simplification Coordinator, Office Chief Chemical Officer,
Department of the Army*

In consonance with the President's Expenditure Control Program, the Chemical Corps is re-emphasizing the importance of improving the management of its operations with a view to achieving the optimum in effectiveness, efficiency and economy. Specific emphasis is being placed on the need for assessing and recording improvements in terms of dollar savings predicated on the view of the Secretary of Defense that "savings" constitute only that portion of the appropriated dollar, actually saved, which is returnable to the Treasury; and further, that estimated or projected savings mean nothing to the tax payer.

To explain the high sounding word "management" in connection with its use in terms of improving operations, we may define it simply as "the art of conducting or controlling administration" or, in Army terms, "management is what the command line does, not what is done to it or for it." *Management improvement*, on the other hand, may be defined as the ultimate product of any planned, directed and controlled effort to change work methods, whereby increased effectiveness, efficiency or economy in the work of an individual or of an entire group, is achieved. Used in this sense, good management means well directed and controlled work processes. In this connection, the Department of the Army established an annual Management Improvement Program in June 1951 complemented by a Work Simplification Program.

The Work Simplification Program may be defined as being just what its title suggests, the simplifying of work. Since it has been established that management is primarily concerned with work, the Work Simplification

Program is then an integral part of the Management Improvement Program.

The Chemical Corps, in re-emphasizing the importance of its management improvement program, held a Work Simplification Clinic during 24-25 August 1953. Officially designated W/S coordinators representing each of the field Commands and major installations met at OCCm10 for the purpose of launching an active and vigorous W/S Program throughout the Corps. Major General E. F. Bullene, Chief Chemical Officer, opened the Clinic by giving the keynote address in which he stated, "I am vitally interested in any program which will benefit our Corps. The Work Simplification Program is designed to improve management beginning at the grass roots, because it is aimed directly at our first-line supervisors. It teaches them how to analyze and solve basic problems in their own units and it makes them a part of our management team. I am pleased to endorse the program and I shall follow its progress and achievements with interest." Following General Bullene, Colonel James H. Batte, Comptroller of the Chemical Corps, spoke on the role of the Comptroller, at each echelon, in the administration of the Work Simplification Program throughout the Corps.

Two-Day Program Conducted

Orientation of the Coordinators in the purpose, plans, policies and procedures of the W/S Program took up the balance of the first day. Guest speakers comprising several W/S specialists in the Washington area gave

presentations followed by questions and group discussion.

The second day of the Clinic was spent in visits and tours of Army agencies in which W/S in action was observed. The group was addressed by Brigadier General Lawrence R. Dewey, Chief, Management Division, Office of the Comptroller of the Army, as follows:

"Fellow workers, we are happy to welcome you to the Pentagon. You are here to learn about Work Simplification.

"You have already, perhaps, preconceived ideas that the Pentagon itself could use a little 'Work Simplification.'

"We are working on that—but we are also concerned about getting all Army personnel to start to analyze their own work no matter where they are located. We believe two heads are better than one, and that thousands of ideas for improvement of day-to-day operations add up to an impressive total. This working from the bottom up is *Work Simplification in Action*. We need your help!

"As we understand it you fellows are going to carry the ball on this worthwhile Work Simplification Program in the Chemical Corps. More power to you! You are starting out in a field of endeavor that will give you a lot of personal satisfaction and unlimited future. The real managers of tomorrow will be those that have learned to apply up-to-date modern management practices today.

"Work Simplification will teach you, and in turn you will teach to others, fundamental techniques used by management engineers. As you get into this work and diligently follow the basic guides set up in the program, you will see improvements upon improvements coming up from all about you. You will begin to feel a part of the current Management Improvement effort and you will get a lot of satisfaction out of it.

"We want you to know that the Office of the Comptroller of the Army is back of you every step of the way. May success crown your efforts.

"Thank you."

The Clinic closed with a three-hour critique in which the coordinators participated so enthusiastically that they unanimously agreed not to adjourn until two (2) hours past the scheduled closing time. Following the clinic, the coordinators returned to their permanent stations where they have established active and productive W/S programs.

Training in W/S begins with the lowest level supervisor and works upward thru an organization much like the mushrooming of an atom bomb explosion. The program begins at the bottom because it has long been recognized that the man on the job knows the job best—he knows first hand what part of his work is subject to improvement; where he may eliminate nonessential tasks, combine others, change the sequence of his operations to improve work flow or eliminate bottlenecks. It has been said that man is the only known animal who will fight to stay in a rut. Supervisors and their workers often get into a rut in performing their daily work. By following the same old rut they become resistant to

change, to new ideas, and to better and easier methods. Work improvements which could be made are not recognized, and old problems are passed over without being reviewed, analyzed and resolved. Training in the use of Work Simplification techniques equips the progressive first-line supervisor with the tools to attack these problems, because W/S is directly related to the three elements of work in which each worker is primarily concerned: (1) The distribution of work; (2) The sequence of work; and (3) The volume of work. Although the W/S program is first a training program it becomes an action program as soon as it is learned and applied.

Management Engineering Tools

The W/S training course consists of training first-line supervisors in the use of five basic management engineering techniques, or tools, which are easily taught, easily understood and easily applied: (1) The Work Distribution Chart; (2) The Flow Process Chart; (3) Work Count; (4) Motion Economy; and (5) Layout Studies.

The W/D Chart is a form on which the activities of an organizational unit may be recorded together with the contributions or tasks of each individual worker. It may be analyzed to determine (1) what activities take the most time and their importance; (2) misdirected effort; (3) proper utilization of skills; (4) performance of too many unrelated tasks; (5) thinly spread tasks; (6) uneven distribution of work load.

The Flow Process Chart is a graphic presentation of steps in a procedure, and it includes such basic data as distance traveled, quantity of items being processed, and time required. It may be analyzed to determine (1) what is done; (2) where it should be done; (3) when it should be done; (4) who should do it; (5) how it is being done; all of which leads to Elimination, Combination, Change of sequence—place or person—and finally Simplification and Improvement.

The Work Count shows volume of work being done and points up faulty methods or procedures, evaluates individual performance and exposes bottlenecks in production flow.

Motion Economy is concerned with elimination of extraneous motions, conservation of energy and useful application in repetitious operations to achieve maximum efficiency in production work.

Layout Studies are involved in:

1. Evaluating space utilization;
2. Analyzing plant and office layout to achieve straight-line work flow;
3. Determining convenience of location for files and/or equipment and personnel having most frequent contact in work performance.

When trained in the use and analysis of these five basic tools, first-line supervisors become, in a sense, their own management engineers. The attractive manner in which the Army and the Chemical Corps have arranged the package training course has elicited contagious enthusiasm from supervisors throughout the Corps. They receive training in small groups to provide for maximum indi-

(Continued on Page 31)

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THE MEDICAL MAN AND CIVIL DEFENSE

(Continued from Page 21)

than the people who built this nation under peacetime conditions.

We have a wealth of land sprinkled with farm homes that can be operated independently, as well as millions of summer homes, cottages and hunting lodges. Even the enormous amount of camping equipment within our nation would provide luxuries compared to what was available to the early settlers. For this reason, it is important to make sure that our cottages, our automobiles, our gasoline supply, our camping facilities, our stored food and water and other necessary supplies and tools be protected against general fires.

Looking at it from this angle, it is obvious that no external agency could possibly take care of this sort of thing for the individual. If it tried to, it would break our economy, because of the excessive taxes and excessive cost of the government doing a thing for people that they should do themselves in their own spare time.

Each person should see to it that the things he and his family will need the most will survive a general fire in the area. One does not need to worry too much about radiation and blast effects from atom bombs; after all these would cover only a small area, which might well be left without survivors from suffocation and carbon monoxide poisoning due to the smoke and heat from the surrounding area being sucked into the chimney rising from the center of the blast.

The best form of survival shelter is a root cellar or cyclone cellar, such as our early settlers could not get along without. In fact, with the doors properly sealed and the cover supported on a porous framework and made of ordinary top soil, preferably good humus and grass, there is enough ventilation by diffusion through the humus to protect the people inside from biological and chemical agents at the same time that it protects them against fire and minor blast and radiation hazards. One square yard of diffusion surface should suffice for one occupant. Actual tests should be made on each structure to make sure it is adequate.

The next best protection might well be steel and concrete structures, which, however, depend upon forced ventilation, air filters and a source of power.

The kind of equipment that most urban dwellers may well see fit to provide will be a modification of a basement room, taking advantage of a door or window opening as an escape directly to the outside with an extra-strong fireproof ceiling and the usual concrete or cinder block partition. The emergency exit should be amply identified outside. The two doors must be particularly well built and fitted and should be made up of a fire-proof and heat-resistant diffusion wall, such as a product called Kay-Lo, which consists of diatomaceous earth bonded with calcium silicate. Wire screens on both sides of a frame filled with charcoal for diffusion panels should make a very good door. Similarly, the ceiling may well be made of a new permeable product consisting of a thick layer (up to 4 inches) of fibrous materials, such as excelsior fireproofed and bonded with magnesium oxy-sulfate cement. Such a material available in large sheets is tough, and would insulate and ventilate by diffusion. Plastering and painting of cinder blocks and cement blocks should be avoided to retain the capacity for ventilation by diffusion.

Finally, there will be many smaller structures and facilities that local conditions and individual aptitudes

and desires will dictate. For example, much can be stored in a hole made by removing several blocks from a basement wall and then digging out the earth beyond and lining it with an old drum, rot-proofed wood or even bricks and tile. The blocks may be set back into position to act as a door. Thus, for very little expense one may have many cubic feet of safe storage facilities for some of the most essential tools and supplies.

In other instances, old drums nested and filled with sand between the walls will make flameproof and heat-resistant storage spaces that can be set out in the yard or even partially or wholly buried. It is also possible to store ordinary canned goods so densely, and stacked with layers of transite, asbestos paper or metal between each layer, that only the outer cans would be likely to over-heat or explode, in case a fire sweeps through the storage space. Chests and cupboards can be arranged to resist burning to the point of giving fair protection to the contents. One should also not overlook the possibility of doing simple things to make a particular cache more safe at the time of the emergency by pouring water onto the sand or soil or cinder blocks that may be used for a fire wall, or before a fire is expected to reach the particular spot.

One of the first things to remember to do is to shut off the hot water heater, the electrical, gas or other source of heat and power, and the water valves. This supply of uncontaminated water retained in the tank may mean the difference between life and death. Broken gas lines and damaged wiring may cause fires.

Every effort should be made to make survival at your normal location possible. This keeps you among your friends and neighbors where psychological attacks are less of a hazard. If caught in a mob, disperse. Stick by your neighbors.

Medical supply kits must similarly be reasonable and practical from the point of view of availability and cost. It is unlikely that a sufficient number of bandages can be bought and stored for each location. On the other hand, old sheets and other articles of clothing that are being discarded should be washed and ironed and securely wrapped with or without dry heat sterilization in an oven. These should then be placed into such tin cans that are normally discarded, for example, potato chip cans and large metal containers obtainable from bakeries and restaurants, and then placed where they are reasonably protected against fire and water contamination. If sealed with solder or tape, they would provide essential supplies that might keep many people from freezing to death in winter after a fire or from death from improper protection against infection for lack of bandages to protect blast and radiation damage. A supply of ordinary soda should be packed with the clothing for wet dressing of burns.

The appended list of publications, films, and circulars will provide much more detail than one can give in this over-all discussion.

In order to take practical self-help out of the realm of speculation and generalities, the Kiwanis Club of Midland, Michigan, has made a project of building and equipping survival shelters, emergency supplies, and first-aid kits. These are illustrated here with descriptions and sketches (Figs. 1-3).

All these grim thoughts and forebodings will accomplish their purpose if, as we confidently believe, this nation will for once gird its loins in time to prevent attack. Then we will be able to think of these efforts in retrospect as the most satisfying and even delightfully vitalizing experiences. The drones may say "a sheer waste of (otherwise idle) time."

Appendix

Survival Under Atomic Attack. Prepared by U.S. Atomic Energy Commission, and may be obtained from Superintendent of Documents, Washington 25, D.C. (10c).

How to Survive an Atomic Bomb. By Richard Gerstell. Two editions: (1) Combat Forces Press, Washington, D.C., distributed by Rinehart & Co., New York (\$1.95); (2) Bantam Books, New York (25c).

United States Civil Defense. Prepared by the Office of Civilian Mobilization of the National Security Resources Board. Superintendent of Documents, Washington 25, D.C. (25c).

Atomic Attack—A Manual for Survival. By John L. Balderston, Jr., and Gordon Hewes. Murray & Gee, Inc., 3630 Eastham Drive, Culver City, California (\$1.00).

Civil Defense Against Atomic Warfare. Superintendent of Documents, Washington 25, D.C. (10c).

Atomic Warfare. H. M. Stationery Office, London W.C. 2, England (2s).

Executive Planning—If an A-Bomb Falls. National Industrial Conference Board, New York 17, N.Y. (\$1.00).

The Effects of Atomic Weapons. Superintendent of Documents, Washington 25, D.C. (\$1.25).

If the A-Bombs Burst. By Clifford B. Hicks. Popular Mechanics, Jan. 1951.

What You Should Know About the Atomic Bomb. U.S. Army Medical Department, Washington, D.C.

Damage from Atomic Explosion and Design of Protective Structures. Superintendent of Documents, Washington, D.C. (10c).

What You Should Know About "RW." By Alden P. Armagnac. p. 144-8. Popular Science, February 1951.

Fire Effect of Bombing Attack. Superintendent of Documents, Washington 25, D.C., (15c).

Health Services and Special Weapons Defense. Superintendent of Documents, Washington 25, D.C.

Civil Defense Against Atomic Attack. Bulletin of the Atomic Scientists, 53 W. Jackson Blvd., Chicago, Ill. (\$1.00).

Control of Radiation Hazards in the Atomic Energy Program. By U.S. Atomic Energy Commission, U.S. Government Printing Office (55c).

It Could Hit Your Farm Tonight. By R. Gerstell and C. Gifford. Farm Journal, April, 1951.

Movies: From Cornell Film Company, 1501 Broadway, N.Y., N.Y. Pattern for Survival.

From Hq., Middletown Air Materiel Area, Olmsted Air Force Base, Middletown, Pa.:
Medical Effects of Atomic Bomb.
Physical Destruction Casualty Effects.
Medical Services in Atomic Disaster.

Midland Kiwanis Club.

WORK SIMPLIFICATION

(Continued from Page 29)

vidual participation during discussion periods. Each group meets for a minimum of two hours twice weekly over a three-week period. Formal classroom periods are alternated with laboratory periods in which trainees gather for a round-table discussion of their work papers. Trainees prepare most of their assignments at their work places where information is readily accessible. During the laboratory period each trainee presents his work to the group for analysis and constructive criticism while the instructor acts as conference leader.

Trainees Analyze Own Units

Trainees are required to review and analyze the work, or operations, of their own respective units by using the Work Distribution Chart with respect to work load analysis, the Flow Process Chart to analyze procedures and methods, the Work Count to measure volume of work, Motion Economy to point up waste or lost motion, and the Layout Chart to determine space utilization problems. With economy as the watch word, they are indoctrinated in the proper utilization of the five M's of management—manpower, money, machines, methods and materials. They are taught to employ W/S techniques toward improving their operations to the extent that tangible monetary savings may be realized. Among other requirements, they come up with at least one management improvement in their own organizational units before they are awarded certificates of Training for completing the Course.

Active follow-up is provided by the local W/S Coordinator who is required to visit each trained super-

visor at least once each quarter to assure that the supervisor is applying his training toward improving the overall activities of his unit. In order to keep the program alive and productive, refresher classes are held periodically. Trained supervisors return for additional training in new or advanced techniques presented by means of training films obtained from the Department of the Army and private industry.

Allied With Awards Program

The Work Simplification Program is closely allied with the Army Efficiency Awards Program in that provision is made for supervisors who are in training or those who have been trained in W/S to receive awards for making outstanding improvements in their own work areas. This has been made possible through the provisions of Section 1002 of Title X, Public Law 429, 81st Congress (the Classification Act of 1949). The efficiency awards authorized by Title X are closely related to previously existing provisions covering awards for suggestions, salary increases for superior accomplishment, and honor awards, except that a cash award may be granted to an employee for savings made in the conduct of his own operations, whether such savings are the result of a suggestion or other personal accomplishment. Cash awards are made not to exceed twenty-five per cent of the estimated savings in the first year of operation, nor an amount equal to three times the step increase of the employee's grade. The possibility of receiving a cash award for suggestions, proposals, and ideas developed through W/S is an added incentive for supervisors to improve the management of their units, although cash awards are not always assured in every case. Army Suggestion Award Certificates, Merit Awards and other types of recognition may be received where the work improvement is not considered sufficiently large to merit a cash award.

The Chemical Corps has a potential of 1700 first-line supervisors for training in W/S. An objective of fifty per cent to be trained by the close of Fiscal Year 1954 has been set. All Chemical Corps Commands, installations and activities are participating in the program, and tangible benefits are already beginning to accrue.

PRESTON B. HELLER



Preston B. Heller, charter member of the AFCA and President of B. Heller & Co., Chicago, died there on Jan. 7, 1954, after a short illness. Col. Heller, who had attended the University of Chicago, served in both World War I and II. His service in World War II in-

cluded duty as Deputy Air Chemical Officer on the General Staff in Washington. He attained the grade of Colonel and was awarded the Legion of Merit and the Army Commendation Ribbon with cluster. Colonel Heller was very active in affairs of our Midwest Chapter. He is survived by his wife, Mrs. Ruth Heller, a son, Preston B. Heller, Jr., stationed at the Army Chemical Center; a daughter, Mrs. Edith Juda of St. Joseph, Missouri, and two sisters, Mrs. Alan Altheimer of Winnetka, Ill., and Mrs. Frederick Livingston of Highland Park, Ill.

CHEMICAL CORPS BRIEFS

COLONEL CUMMINGS RETIRES



Lt. Col. Ralph B. Cummings retired from active duty December 31, 1953, after completing 28 years of Army Service. A native of Melrose, Massachusetts, Colonel Cummings served in the 26th Division of the Massachusetts National Guard from 1929 to 1941, was inducted into the Federal Service in 1941, promoted

Captain in 1942, and commissioned in the Regular Army in 1947. From 1943 to 1946, Colonel Cummings served as a Budget Fiscal Officer in the Air Force. Other assignments included 42 months in the European Command. Colonel Cummings will live in West Harwich, Massachusetts.



DECORATED FOR GALLANTRY

Recently received in this country was the above photograph of four members of the 71st Chemical Smoke Generator Company decorated for gallantry in the Korean operations. From left to right: SFC James L. Hall, recipient of the Silver Star Medal; Captain Thomas L. Stovall, 1st Lt. Sidney Sanders and 2nd Lt. Charles A. Payne, recipients of the Bronze Star Medals. The decorations were presented by Colonel David Armitage, Chemical Officer of the Eighth Army. All of the citations pertain to gallantry in action on 8 July, 1953, supporting the withdrawal of two infantry companies from an outpost position.

COLONEL COBLENTZ RETIRED

Colonel Siegfried Coblenz, former member of the Chemical Corps Board since February 1953, retired in January. When called to active duty in September of 1940, he was employed as a petroleum technologist in Providence, R. I. His Army Service dates back to World War I when he served a tour of duty with the AEF. During World War II he participated in the Naples-Foggia, North Apennine and Rome-Arno campaigns.

THE

HISTORICAL CORNER

By BROOKS E. KLEBER*

DEATH IN ANZIO HARBOR

During World War II a wry smile was the least reaction of a 4.2 mortarman upon hearing that his was a service unit and rightfully belonged in the rear area. For there were many Army officers who thought that Chemical Warfare functions were confined to gas, masks, and smelly clothing. In truth, the mortar battalions, smoke generator units and even service companies all knew from first hand experience that there was a fighting war going on. Of them all, however, it was the unfortunate lot of the 83d Chemical Mortar Battalion during the initial operations at Anzio to have suffered the greatest disaster of any CWS unit during World War II.

Late in the evening of January 25th, LST 422 crept into Anzio harbor packed with 495 officers and men of the 83d Battalion. Scheduled to disembark the next afternoon, the men on the crowded ship bedded down as best they could in the sleeping quarters below and among the many vehicles that cluttered the top deck.

Shortly after 0500 the next morning LST 422 struck a mine. Fires started and the resulting smoke clothed the doomed ship like a shroud. Trucks tossed about by the blast pinned men to the deck and prohibited their escape; compartment doors jammed by the explosion, trapped many others below. Wind and heavy seas hampered the firefighters and as the flames raged through the ship they reached the 1,500 rounds of mortar ammunition stored on board. The shell fragments and white phosphorous which filled the air all but prohibited efforts to cut down the life rafts. Men were told to jump into the freezing water. Many had lost their life belts and boxes and cans pressed into service were but poor substitutes. The temperature of the water, the waves, and the confusion added to the list of the dead. For some the horror was compounded. One LCI picking up survivors in turn hit a mine and sunk.

As casualty lists came in it was found that over half of the men on LST 422 had lost their lives on this one fateful morning. No wonder the mortarman wryly smiled.

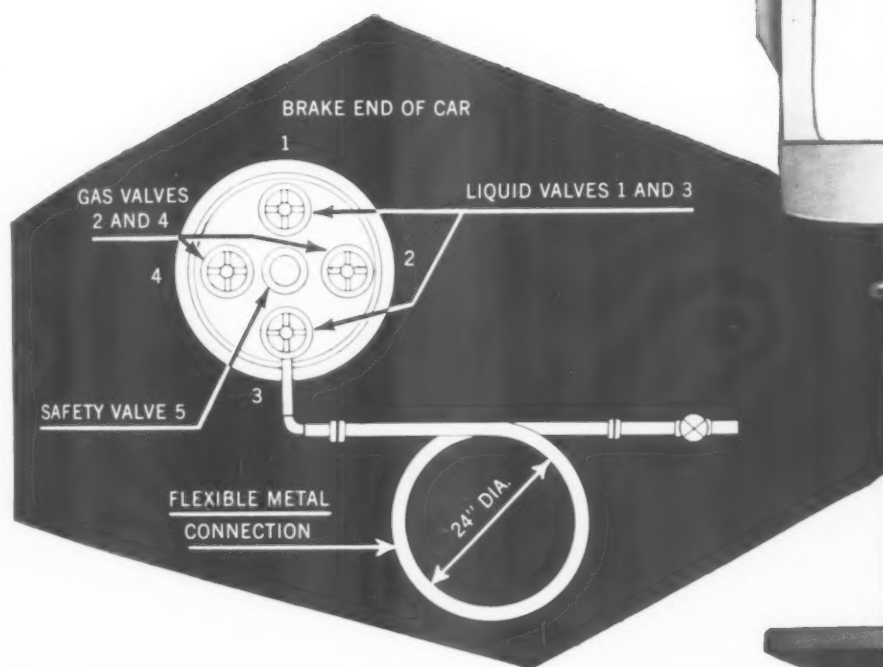
*Member of the Staff, Historical Office, office of the Chief Chemical Officer.

Seven of the 14 years he served since being called to active duty were spent overseas, where tours of duty took him to Europe, China, Burma, India, Japan and Korea.

Numbered among Col. Coblenz' decorations are the Purple Heart, World War I; Legion of Merit; Order of the Cross of Italy; Order Sts. Maurice and Lazarus; Bronze Star Medal; Imperial Order of St. George; Military Order, Concordia, and the Imperial Order of Constantinien.

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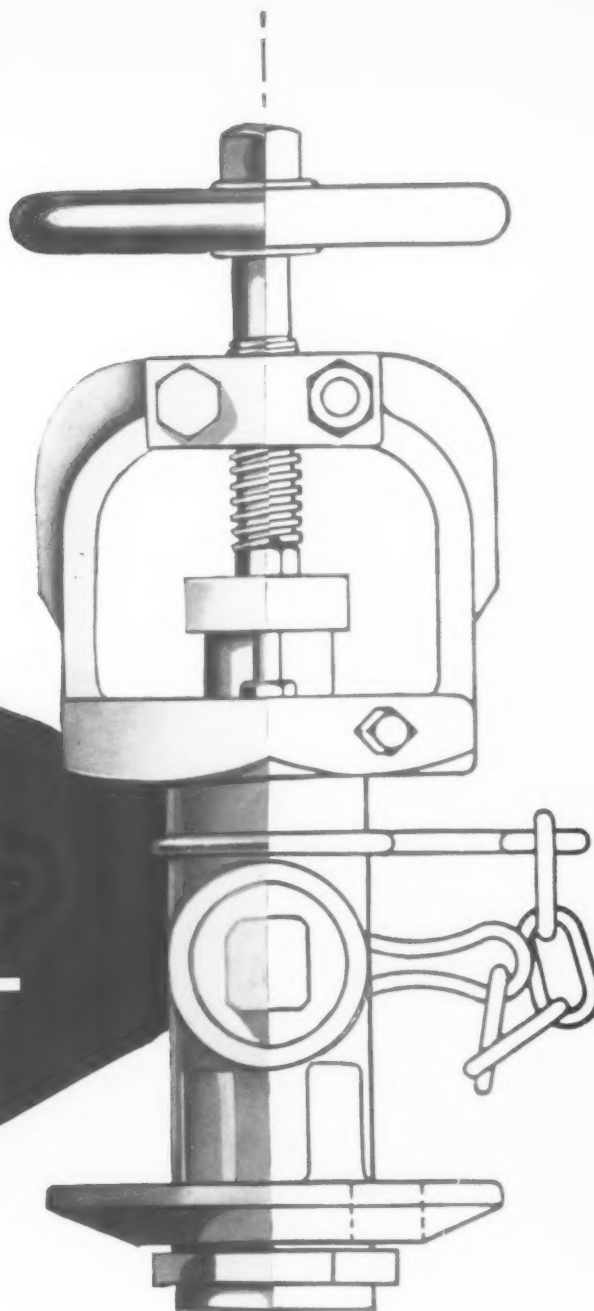
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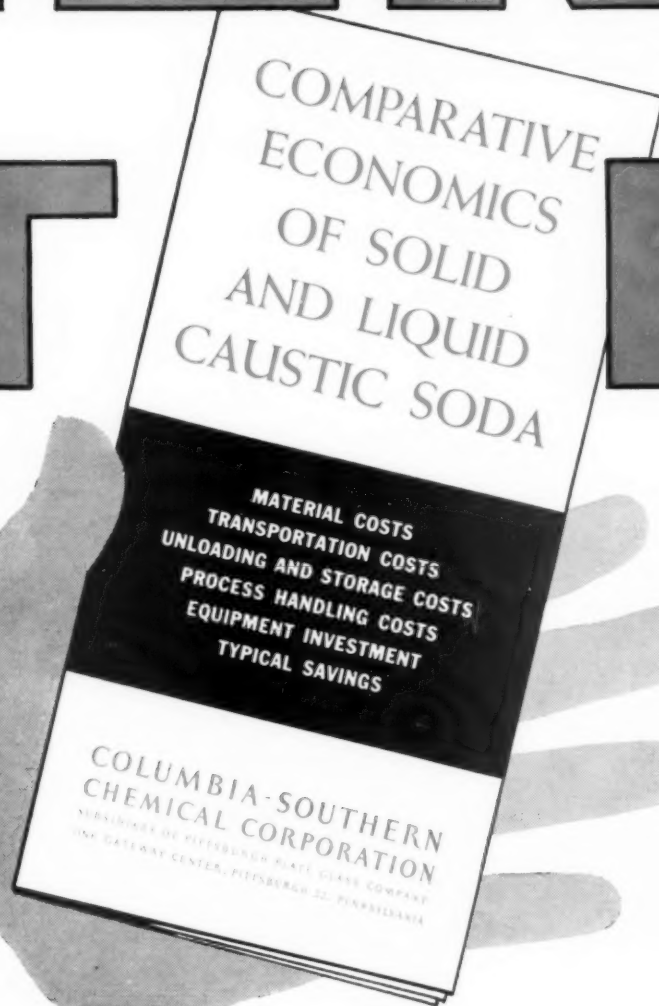
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